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## Fine Pará Three Cents a Pound

A WIDELY traveled writer, Captain S. C. Bullock, M. C., M. I. M. M., recently reported upon the results of an expedition up the Tocantins and Araguaya Rivers in Brazil. In a paper read before the Royal Geographical Society, London, he mentions the large areas of rubber trees between the Araguaya and the Xingu Rivers. At Concessao, formerly an important rubber center, he found business almost at a standstill. What little rubber was sold brought only three cents a pound. This is probably the lowest price Fine Pará has ever touched.

## Hevea Tea

TEA topers are fighting the adulteration of *Thea sinensis* by leaves of the *Hevea brasiliensis*. Ceylon tea packers have, it is said, used rubber leaves as an adulterant even up to 50 per cent of volume.

Perhaps tea merchants should not thus impose upon devotees of the fragrant beverage, but are they not perhaps doing the world a favor?

Who shall say that the 50 per cent rubber infusion is not even more wholesome than the 100 per cent Orange Pekoe? Old medicine men of the tropics tell of using rubber milk for ailments for which in other lands herb doctors prescribe teas made from sage and sassafras, catnip and camomile. It is even conceivable that analysis will reveal in Hevea leaves tonic and stimulating principles that are more potent yet less harmful than in the best commercial teas. Perhaps it is not even too much to expect that Hevea tea will be found to restore elasticity to hardening arteries, and thus prove itself a veritable elixir of youth.

## After Balloon Tires, What?

ANSWERING the question in the above caption William Ullman of the Ullman Feature Service, quoted at length in the *Literary Digest*, says:

"The next thing in tires is believed by many to be the two-tube balloon. The motoring public is growing weary of changing tires. Some years ago a Pennsylvania motorist experimented with four rear tires on a touring car. While the plan had many disadvantages, the least of which was the unsightliness of the rear, the outstanding advantage was that in event of a rear wheel puncture the owner did not have to stop for a tire change. From this experiment, and others like it, has developed the idea that the ordinary tire ought to be equipped with two inner tubes. The two-tube idea could not be used satisfactorily in a high pressure cord tire, because with the tubes under fifty or sixty pounds of air-pressure friction between them would be excessive. When one tube punctured the sudden expansion of the other to fill the extra gap would be too much of a strain for rubber. The good tube might even force itself upon the nail that had punctured the first tube, thus resulting in a double puncture and a flat tire.

"The balloon changes the situation. Here the tubes would be under comparatively low air pressure so that friction between them would be minimized. In event of the puncture of one tube, the good tube being under comparatively low pressure could expand to fill the gap without danger of bursting. Since the walls of the balloon tire are so flexible no particular harm would be done to the tire if the motorist drove on for the rest of the day

relying upon the one tube even though its pressure might not be quite up to normal."

The writer is not familiar with the Stepney spare wheel that motorists refused to adopt. Nor the Macgowan collapsed ball tube that automatically replaced punctured balls with self-expanding ones. Moreover, is it true that with a second tube expanding under sixty pounds pressure the tire would burst? We trow not. As to the friction between tube and casing being less in a low pressure tire than high, is that true? Is not the tendency to "creep" very much greater. Really the anxiety concerning the successor to the balloon tire is not warranted. As a matter of absolute fact, fabric tires and high pressure cords are not likely to disappear overnight. The practical course is for those who produce and those who use balloons to learn more about them. For example, while the low pressure tire will function with less air than its predecessors it will be damaged by too little inflation. Nor may the tire be abused by overloading, curb climbing, rock riding, or excessive speed on rutty roads. No air-filled tire will ever be puncture-proof, abuse-proof, or fool-proof.

## Henry Ford, Rubber Planter

MR. HENRY FORD has apparently concluded to conduct practical and extensive experiments in planting rubber on American soil. For such demonstration he is credited with having bought in the vicinity of Labelle, Henry county, Florida, and contiguous to the Everglades, over 8,000 acres, including a town site with buildings and public utilities. Here, it is stated, rubber culture experts will lose no time in getting the enterprise under way.

Certainly the venture will interest the horticultural and manufacturing world as have few other similar endeavors to provide at home in the temperate zone raw materials hitherto raised only in the tropics. Unlike many another well conceived project, this one will be carried forward under uncommonly favorable auspices. Funds unlimited are available, and that connotes the best counsel, experience, and industrial equipment to combat unpropitious and enhance favorable factors of this ambitious effort to serve the American rubber trade, or, as some might view it, to achieve a high, patriotic emprise.

An obviously adverse condition is that of latitude. The section selected is far north of the equator—some 1,800 miles, or no farther south than Brownsville, Texas. Compare this with other rubber-growing regions, as the Fiji Islands, 1,300 miles; Mexico (Chiapas and Tabasco), 1,150; French Indo-China, 770; New Guinea, 690; Philippines (Mindanao), 560; Ceylon, 480; Sumatra and the Malay country about Singapore, about 125 miles from the mid-tropic line. Nor does this take into account the equatorial valley of the Amazon, the birthplace of the *Hevea brasiliensis*, the premier rubber tree to which the plantations of the Far East owe their enormous yield.

The rubber tree is at its best in a warm, humid atmosphere. Southern Florida has a mean annual temperature of 70.8 degrees, with a slightly higher average in the proposed plantation area. This is rather lower than in proven territory, which is 77 to 80 degrees, yet it may be sufficient if other conditions be auspicious.

Rainfall averages 52.09 inches there, in contrast with 90 in Chiapas and Tabasco, Mexico; 95 in Trinidad and the Guianas; and 100 inches or more in most rubber lands. An even temperature, and even distribution in rainfall seem to be quite necessary.

Then, too, there is the cost of labor. For the Malayan plantations ample help may be had for as low as 50 cents a day. City help in Florida costs $4 and $5 a day. But for the Ford enterprise colored labor may be had cheaper from cotton plantations, although cotton picking is easier learned than rubber gathering.

Especially commendable is the fact that the undertaking is to be carried on wholly through private initiative, instead of relying upon the paternal aid of government The great marsh lands he has secured have an alluvial soil rich in humus; they can be drained so that the tap roots of the trees may be in damp earth yet not in water; other physical drawbacks may also be largely offset. Moreover, the sub-tropical section selected grows trees found nowhere else in the United States, and some 187 varieties common to the West Indies and to Central and South America. Taken as a whole the outlook is very promising.

## Rubber and Reparations

MR. ALBERTO PIRELLI of the great rubber firm of Pirelli, Milan, Italy, is known to many in the United States. Possibly it is not generally known that he took an active part in the preliminaries that went far to crystallize the Dawes plan for the settlement of the European financial tangle. When the members of the International Chamber of Commerce met in Rome, M. Pirelli as member for Italy was a prominent figure. His broad knowledge of international affairs and his faultless logic were of the greatest assistance in framing and passing the resolutions that received much respectful and gratified attention from the allied and associated governments in every country in Europe. The set of principles so clearly enunciated by the Rome Committee was followed out in almost every detail by the Dawes Committee.

It is gratifying that business men rather than politicians are arranging sane settlements of international problems, particularly as rubber leaders are taking a hand. An international committee composed of men of the stamp of M. Pirelli might point the way to an arrangement between producers and consumers of crude rubber that would be fair and profitable to all concerned.

"HONOUR THE LORD WITH THY SUBSTANCE, AND WITH the first fruits of all thine increase." Proverbs, 3:9.

# Rubber Reducing Corsets[1]

## Latest Corset Development Offers New Outlet to Rubber Industry—Present and Prospective Demand for Special Rubberized Fabrics—Outline of Processes for Preparing Rubber Corset Stock

THE American rubber industry is now demonstrating the facility with which its resources can meet an unexpected demand in large volume. The occasion in this instance is the sudden popular demand for the recently patented rubber reducing corsets and girdles[2] for women's wear. Indications are that the new line is not a mere fad but possesses inherent merit sufficient to ensure a growing non-seasonal, permanent demand.

Orders from corset manufacturers are concentrating on those rubber plants that possess the requisite fine calendering equipment and dry heat vulcanization facilities essential for the preparation of the stock.

### All-Rubber Garments

The originals of the present line of reducing garments were made entirely of pure vulcanized calendered sheet cut, made and cured in the rubber factory. They were finished at the corset factories by the attachment of lacing or fastening devices, and garter attachments, secured to fabric insertion reinforcements and stays cured in place in the garment by the rubber worker.

*The Corset and Underwear Review*

(A)—FRONT CLASP NON-LACING TYPE. (B)—BACK LACING MODEL. (C)—ANOTHER BACK LACED TYPE. (D)—NEMOLASTIK RUBBER GIRDLE. (E)—KLEINERT'S "MIRACLE."

**Popular Types of Rubber Reducing Corsets**

At first the reducing garment was worn next to the skin, but practical experience soon demonstrated the superior comfort and equally effective results in reduction obtainable from elastic fabric garments with rubber insertion. This at once eliminated the manufacturing feature from the rubber maker, whose rôle now is confined to the preparation of the cured elastic stock for the corset maker.

Although the work of the rubber maker is only preparatory it calls for special compounding and high class calendering equipment in excellent condition and skillfully operated.

### Fabricated Combinations

The material as delivered by the rubber maker is in one of four constructions: (1) pure vulcanized sheet garment ready for finishing; (2) mercerized cotton net rubberized on one side; (3) silk stockinet rubberized on one side; (4) silk stockinet doubled on a central ply of rubber.

The silk stockinets used are of extremely fine glove quality of Italian make.

### Fabrics

The fabrics used are circular knit of very pale pink or flesh color. They are so light in weight that they are virtually transparent before coating. Therefore, in order that the beauty of the goods may not be impaired, the rubberizing stock is made of first quality latex crêpe tinted to match the color of the fabric. In fact, the compound used represents the latest development in rapid curing pure gum, dry-heat stock. It meets conditions that would not have been practical a few years ago but are now quite within control with new colors and organic accelerators.

The delicacy and thinness of the silk fabrics used make essential the exercise of great skill in calendering the goods. The machine perfection necessary may be judged by the fact that the rubberized, doubled fabric measures but 0.025 inch in thickness, with no rubber visible on either face.

### Preliminary Rubber Work

The preparation of the rubber and compound ready for the calender is done by the usual rubber mill processes. That is to say, the highest quality of plantation first latex crêpe rubber is seasoned in a dry kiln under controlled conditions of heat and humidity to develop its maximum tensile properties. It is then plasticated or softened by milling on heated, heavy steel rolls. Definite proportions of sulphur, color, fillers, and organic accelerator are added and thoroughly incorporated by further milling. This is the usual procedure preliminary to working up rubber in any succeeding process. In this instance the next process is calendering the rubber either as pure gum sheet or as a coating upon knit fabric.

### Calendering

An even motion coat of gum is applied by a heavy three-roll calender the rolls of which are ground and polished with extreme precision. The calender rolls are run virtually metal to metal, producing a film of gum so thin as to appear only as a mere translucence upon the middle roll. The fabric passes smoothly through the calender without tension, receiving the rubber coating without impregnation or distortion.

When two pieces of fabric have been thus coated on one side the goods are doubled, rubber to rubber by passage, also without tension, through an ordinary two-roll doubling machine. The edges of the combined fabric are neatly trimmed as the goods pass from the doubler over a table to a stock shell mounted in a winding-up device.

[1] Data supplied by The Hodgman Rubber Co., New York, N. Y.

[2] United States patent No. 1,494,086, May 13, 1924, to J. A. Weil.

### Vulcanization or Curing

The doubled uncured material is draped in folds on a curing rack, and transferred to a dry curing chamber where it is vulcanized under time and temperature control. The stock emerges from the brief curing process very elastic and snappy in its crosswise direction. Naturally there is practically no stretch to the goods lengthwise and none is required in that direction since compression in the finished article is wholly transverse to the height of the wearer.

### Types of Reducing Garments

From whatever type of rubber or rubber and fabric combination reducing garments are made they effect the desired result by reason of the uninterrupted massage which occurs by the exercise of the body in its ordinary movements. Naturally, the variety in size, shape and style required are many. A few typical forms are here illustrated which make clear the fabrication of the rubberized material into the finished article. The cotton and silk fabrics not only allow the materials to be formed, boned and sewed to definite shapes but protect the garments from tearing in service.

### Current Demand

It is estimated that the current demand for reducing corsets, girdles and brassieres is at the rate of 5,000,000 garments yearly. What the ultimate demand will be cannot now be predicted.

In corset trade circles it has been pointed out that wearers of the new type corsets should be reminded that these are not style garments and should only be worn in conjunction with a fabric garment. Much interest is now evident among rubber manufacturers concerning the fate of this new development and to what extent they are to share in its profits.

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### M. & A. M. A. TO HOLD CONVENTION IN CLEVELAND

The 1924 fall convention of the Motor and Accessory Manufacturers' Association will be held October 6 to 8 inclusive at Cleveland, Ohio. Further details as to speakers, topics, and final arrangements will be announced later.

Included in the organization's directorate are now the presidents of three national associations: G. Brewer Griffin, of the Westinghouse Electric & Manufacturing Co., and president of the Motor and Accessory Manufacturers' Association; W. O. Rutherford, of The B. F. Goodrich Co. and president of the Rubber Association of America; and H. L. Horning, of the Waukesha Motors Corporation, lately elected president of the Society of Automotive Engineers.

Clifford B. Reeves, eldest son of Alfred Reeves, general manager of the National Automobile Chamber of Commerce, has also recently joined the staff of the Motor and Accessory Manufacturers' Association. He has been lately graduated from the University of Pennsylvania and will assist in the work of the educational, show, and credit departments.

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### LINCOLN HIGHWAY DEVELOPMENTS

A semi-monthly report, dated July 16, 1924, from the Lincoln Highway Association shows that nine of the divisions of this famous roadway, extending from New York City to Clinton, Iowa, are now in excellent condition, the roadbeds for this distance being constructed of such materials as concrete, brick, macadam, or gravel. Other sections continuing to Sacramento, California, are in course of building.

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ENGLAND LED OTHER COUNTRIES IN HER MAY EXPORTS OF AMERICAN-made solid tires, taking goods valued at $83,676. Other purchasers included Cuba, at $22,103; the Philippines, at $17,571; New Zealand, $16,149; Australia, $15,959; and Argentina, $11,919.

## May Exports of American Rubber Goods Show Increase

The value of American rubber goods exported during May totaled $3,669,432, a figure, according to *Commerce Reports*, which has been exceeded in only two months (March and April, 1923) since the close of the boom period in 1920. Increases in tire shipments are responsible for this advance in May export trade, although other features include record-breaking shipments of rubber soles and heels, and rubber belting exports exceeded in only one previous month.

Exports of tires and tire sundries have increased steadily during the first five months of 1924, following a decline during the last half of 1923, while the figures for May, 1924, represent an advance in each class, as compared with the month previous. May exports of solid tires other than for automobiles have, at 169,753 pounds, been exceeded in only one month since the beginning of 1923. Prices for inner tubes and automobile casings have steadily increased during 1924, the average unit value for the latter being about $11.60 during the first three months of the year; in April it was $12.40; and in May, when 125,120 were exported, it was $12.58.

Exports during May of mechanical rubber goods were also very satisfactory, rubber belting in particular, at 374,775 pounds, exceeding the total for any previous month except May, 1923, when 385,175 pounds were exported. A preliminary examination of belting trade statistics for the principal manufacturing countries indicates that in 1923 exports of rubber belting from all countries increased more than 26 per cent as compared with 1922, the United States exports increasing over 37 per cent.

The advance in exports of canvas rubber-soled shoes also continued during May, the number of pairs shipped being 261,704, with value $216,952. Cuba and Mexico were the leading customers for these goods, the latter also leading other countries in a purchase of rubber soles and heels estimated at 90,718 pounds, and valued at $27,120. Other important customers included the Philippines, Argentina, England, and Canada. The leading purchasers in May of rubber boots and shoes were England, Cuba, Austria, China, Brazil, Argentina, and Sweden.

Shipments of toys and various rubber sundries were in good volume, as were also the exports of hard rubber goods.

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### EXPOSITION OF INVENTIONS

From December 8 to 13 inclusive, 1924, an Exposition of Inventions will be held in the Engineering Societies Building, New York, N. Y. The display will be handled through the Inventors' Section of The American Institute of the City of New York, and exhibits representing the leading American industries will show developments of various machines, utilities, and processing methods.

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DURING MAY THE LEADING PURCHASERS OF AMERICAN CANVAS rubber-soled shoes were: Cuba, taking 79,837 pairs, value $54,555; Mexico, 45,473 pairs, value $43,045. Other customers included: England, 15,462 pairs, value $12,655; the Philippines, 15,312 pairs, value $16,792; Argentina, 12,831 pairs, value $10,313; Denmark, 12,509 pairs, value $8,673; and Canada, 11,224 pairs, with a value of $9,284.

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ACCORDING TO THE BUREAU OF THE CENSUS, UNITED STATES production of tire duck totaled in 1919, 123,465,422 square yards, value $143,086,211. The corresponding figures for tire fabric other than duck were 36,805,932 square yards, value $32,601,941. For 1921 the totals for tire duck were: 51,722,845 square yards, value $57,738,475, while tire fabric other than duck was estimated at 43,933,691 square yards, value $43,913,959.

# The 1924 Rubber Footwear Line

## Footwear for Every Use—Special Boot Types—Lumbermen's and Farmers' Footwear—Women's Gaiters—Footwear Creations—Rubber Work Shoes

THE 1924 line of winter footwear, with prices unchanged from last season, is noteworthy for the increased standardization and concentration on the big staple sellers with the usual addition of new lasts and styles to keep up-to-date with the latest leather models. Despite the lateness of the winter of 1923-24 and the lack of snow and slushy weather in the East, the rubber footwear manufacturers anticipate a large demand for next season.

### A Product for Every Demand

The rubber boot line of all the companies shows the results of intensified and specialized selling in the last few years and the efforts of the manufacturers to put out a product to meet every demand. Thus we have heavy boots for street and sewer workers, "Down East" fishermen, light boots for the angler, acid-proof boots for the industrial worker, red-trimmed holiday boots for the kiddies, large leg boots with big loops for the fireman, and medium weight short boots for the man who does the chores round the house and washes his own car.

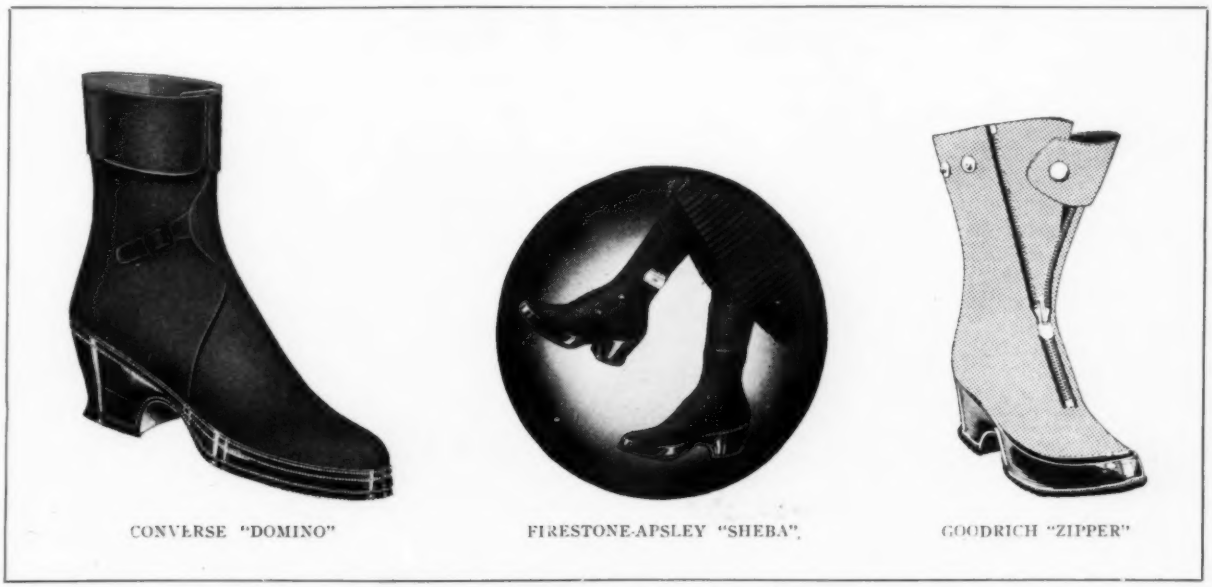
No noteworthy new developments in boot construction are noted. Practically all the companies are vulcanizing boots by either the steam or air pressure method, which insures a firm bond of all the parts and eliminates separation and looseness. Most of the lines carry three colors, red, black, and white, some are finished dull, others are starched before vulcanizing, giving a soft finish. The only varnished boots offered are the cheaper and lighter grades for children.

The Lambertville Rubber Co., Lambertville, New Jersey, is offering a new boot of cord construction, the leg and vamp being made of cord fabric like that used in the cord tire. This is an interesting addition to the already well-known "Snag-proof" line and its progress will be watched with interest.

Probably the largest and most varied lines of boots are offered by the United States Rubber Co., The B. F. Goodrich Rubber Co., Hood Rubber Co., and the Mishawaka Woolen Co. "Ball Band," "Hi-Press," "Hood" and "US" are the brands offered. The United States Rubber Co. has a boot called "Naugasole" which meets a special condition with a sole constructed to resist unusually heavy wear in garages and on concrete floors where oil and grease, which eventually decompose rubber, are constantly encountered.

### Special Boot Types

A special boot for firemen, offered by the Columbus Rubber Co., Montreal, Canada, with the trade name "Fire Prince" and in the United States with the trade name "Fire Chief," has the feature of a large roomy leg with heavy duck construction, large loops to aid in pulling on quickly and a roomy hip top which brings the height of the boot to the waist line.



CONVERSE "DOMINO" FIRESTONE-APSLEY "SHEBA" GOODRICH "ZIPPER"

**Distinctive Features in the 1924 Footwear Line**

Boots for Christmas trade which will attract the children are the "Bunny" boot, offered by Hood, which has a red band round the top with an attractive bunny design; the "Holiday" boot, by La Crosse; the "Santa," by Converse; and the "Red Top," by Goodrich. These boots are very often packed in attractive Christmas boxes and make a very popular selling number for the early trade.

The increasing interest in brook and lake fishing has created a demand for a boot, light in weight yet sturdy in construction, which will prove satisfactory for this sport. This type of boot is offered by Converse with the trade name "Rod and Reel"; by Hood with the "Trouting Boot"; Goodrich with the "Angler's Boot"; La Crosse with the "Utility Sporting Boot"; and United States with the "Angler." One of the chief selling points of this type of boot is that it can be rolled up and inserted in the traveling grip or suitcase.

### Lumbermen's and Farmers' Footwear

The lumbermen's field offers the usual numbers, which have their specialized uses for lumberjacks, woodsmen, farmers, miners, and industrial workers. Leather tops stitched on rubber "overs," which are practically the same construction as boot bottoms, with and without heels, are still the favorites in the lumber industry and also find favor among winter sport enthusiasts who visit Maine and New Hampshire for skiing, snowshoeing and the like. The coal mining industry has a decided preference for a white bootee or pac, which is a synonym for the highest quality among all the rubber shoe companies. The United States' "Giant Bootee" is a well known number in this line. Other companies put out similar shoes, except that the black extension sole is distinctively "US." One and two-buckle perfections worn with felt boots and lumberjacks worn with heavy hose are staple numbers carried by all companies. The sport of fall hunting has created a demand for a rubber shoe for this purpose. The "Sportsman's Special" made by the La Crosse Rubber Co. is shown as typical of this kind of shoe. Hood offers a similar shoe with the "Saginaw," United States with the "Red Cruiser" and Converse with the "Nimrod." The uppers are of heavy brown or khaki duck rubberized to make it waterproof, and the shoe is worn with heavy hose like a hunting boot.

The farming districts of the West offer a fertile field for all-rubber overshoes, which are built to withstand constant exposure to the worst rain, snow, mud, and slush. Well-known types of this style are the Hood "Kattle King," United States "Walrus," "Ball Band," La Crosse "Cruiser," Cambridge "Round Up," Goodrich No. 417, Converse "Nebraska." Alternates to this line and preferred in some farming sections are the heavy cashmerette 4- and 6-buckle gaiters, with double sole, waterproofed throughout with an extra layer of gum between the cashmerette and the lining. Some of the well-known numbers are La Crosse "Winona," United States "Portland," Goodrich No. 410, Cambridge "Portland," Hood Red Rock "Portland," Columbus (Montreal) "Conductor," "Ball Band," Converse "Watershed."

### Development of Women's Gaiters

The volume of light-weight first quality jersey gaiters for women, misses, and children has more than quadrupled in the past few years. Since the wearing of low shoes the year round has become popular this type of shoe has become indispensable in the winter months. As far back as ten years ago students at the various colleges instituted the fashion of wearing them with the buckles flapping, which was an outgrowth of the inconvenience of buckling and unbuckling the clasps when wearing the overshoes for a few minutes while passing from one class to another. Various new types were tried out and marketed successfully to overcome this objection, and efforts were made to decorate the shoes in keeping with the spirit of "jazz" which became rampant. The Cambridge Rubber Co. developed the "Radio Boot" with the slogan "On and off in a flash over the shoe"; Converse brought out the "Oh Boy," which was a jersey gaiter with a wide straight leg and turndown top; gaiters with eyelets instead of buckles were introduced; astrakan cuffs were put on the regular gaiter on such shoes as the Hood "Astrakan," United States "Cavalier," La Crosse "Ermine," and "Eskimo" and "Polar Bear" of the Russian type, Converse "Neva" which superseded the "Oh Boy" in 1923.

**Staple Footwear Sellers for 1924**

### Noteworthy Footwear Creations

The 1924 line offers the "Radio Boot" by Cambridge, the "Astrakan" by Hood, the "Cavalier" by United States, and the La Crosse "Ermine," "Eskimo" and "Polar Bear," indicating that these shoes have come to stay. Perhaps one of the most noteworthy creations of last season which is meeting a still larger demand for 1924-25 is the "Zipper," put out by The B. F. Goodrich Co. This type of gaiter is made with a well-known type of slide fastener used successfully for tobacco pouches. Firestone-Apsley Rubber Co. has brought out the "Sheba" to meet this competition, which operates with snaps and a nifty band. Converse has added to its line the "Domino," which slips on easily and fastens by means of a tab and male and female fastener. If desired the cuff may be turned up and fastened, giving the full four-buckle height. The Columbus Rubber Co., Montreal, furnishes a combination button and buckle gaiter called the "Milden."

The most staple article in the entire footwear line, the light gum shoe or rubber, has changed little in style with the exception that many new lasts have been introduced to follow the latest styles of leather shoes, thus insuring a perfect fitting rubber.

### Rubber Work Shoes

The most popular development in recent years has been the work rubber, built of the heaviest and best materials, vulcanized under pressure, for the working men in arduous occupations, such as policemen, firemen, postmen, milkmen, conductors, motormen, and railroad men. These men will wear out an ordinary rubber in a few weeks so that it is necessary to build something more substantial. This is offered in the Hood "Postshu," United States "Patrol," Converse "Caboose," Cambridge "Traffic," La Crosse "Carrier." Most of them are made half-storm type, with white or red soles and dull uppers.

Tyer Rubber Co. is offering an attractive line of rubbers made by their layout method whereby all the parts are submitted to pressure before assembly, thus insuring perfect union in the shoe.

No mention has been made in this review of the canvas footwear or tennis line, as the new samples for the 1924-25 selling

season do not come out until August or September. The vulcanized crêpe sole now being used on tennis shoes has not been adopted for the winter line to any great extent, although some shoes have been offered with this feature. The slack winter has brought about the development with some numbers to be sold to meet low price demand, especially in the line of substitutes for the first grade cashmerette and jersey cloth which form the most expensive item in the overshoe line.

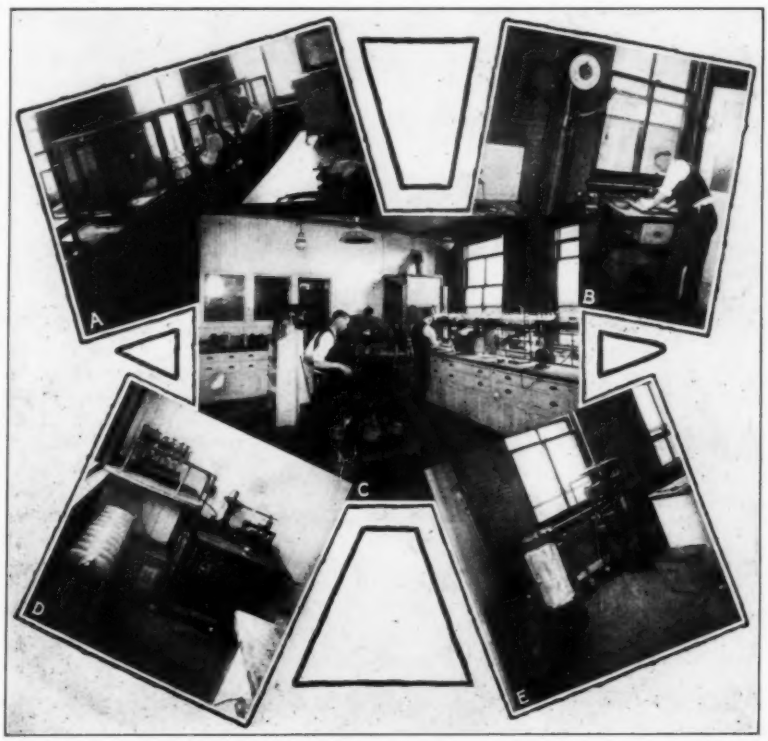
# Reclaimed Rubber Service Laboratory[1]

## Pioneer Reclaiming Laboratory

THE United States Rubber Reclaiming Co. was one of the first to install a chemical laboratory, foreseeing the necessity in the demands for uniform standard materials as well as the need of accurate control of works process. The first laboratory was a very small room with limited equipment for routine analytical work. This was soon outgrown and was expanded into a large area and organized into a chemical department.

The reclaimed rubber chemist finds his first problems in grading and blending scrap stocks for the standard reclaim products. Next come those of process control concerning strength of chemicals, time, heat, drying, followed by chemical analysis and physical tests of the products, and their adaptation to the standard or special specification requirements of rubber goods manufacturing. The chemical department of a reclaiming plant is thus a vital factor in its operation.

Reclaims enter into the great majority of rubber articles made today, excepting dental dam, elastic thread and certain types of druggists' sundries. In many articles reclaims are even more important than crude rubber. Therefore, absolute standard uniformity is essential and it is only by constant and accurate chemical supervision that such uniformity can be maintained. The prejudice which existed at one time against the extensive use of reclaimed has disappeared and there are very few compounders today who disregard the technical and economical advantages to be derived from the use of standard reclaimed rubber.




(A) BALANCE ROOM. (B) PHYSICAL LABORATORY—TENSILE TESTING MACHINE. (C) GENERAL LABORATORY. (D) PHYSICAL LABORATORY—APPARATUS FOR TESTING RESISTANCE TO STRAINS UP TO 50,000 VOLTS. (E) VULCANIZING DEPARTMENT.

**Laboratory of the United States Rubber Reclaiming Co.**

Rubber goods manufacturers admit the general advantages of reclaim as a component of their goods even though they may not appreciate their technical and economical importance in special applications. The function of the reclaimer's laboratory does not end with the production of standard grades but extends to include the solution of manufacturers special problems in specification work, as in the fire underwriters' current requirement for code wire; the use of accelerators; compounding, mixing, plasticising, aging, etc. For the solution of all such problems the reclaimer extends to the rubber manufacturer the aid of his analytic research and testing facilities plus the benefit of his own manufacturing experience.

The accompanying group illustration gives an excellent idea of the general equipment of the various departments of the chemical laboratory of the plant of the United States Rubber Reclaiming Co. This laboratory not only equals in equipment those of most rubber goods manufacturing plants in point of general size and equipment for analysis of materials, products and works control, but exceeds them in facilities to handle the experimental work involved in compounding and specification problems arising in any division of the rubber industry.

[1] Data and illustrations supplied by The United States Rubber Reclaiming Co., New York, N. Y.

## COMPARATIVE DECLINE IN U. S. RUBBER EXPORTS AND IMPORTS

According to statistics appearing in "Our World Trade, January-March, 1924," a bulletin published by the Foreign Commerce Department, the United States imports of crude rubber from January to March inclusive, 1924, were 11 per cent lower in value than for the corresponding period a year ago. Among fifty chief imports for this first quarter of the year crude rubber and rubber latex, although ranking fourth, with a value of $41,349,000, totaled in quantity only 166,104,000 pounds, as compared with 209,424,000 pounds for the first three months of the year previous. This was due to British restriction of rubber.

A decline is also evident during this period in United States exports of automobile tires, 294,564 casings, value $3,916,000, being exported during the first three months of the present year, as against 474,750 in the first quarter of 1923, a loss of almost 40 per cent. In general, the export trade of this country during the first quarter of 1924 was stronger than a year ago, while the import trade was less.

# Rubber in Modern Airplanes[1]

## Thirty-Six Rubber Appliances—Types of Modern Planes—Rubber in Giant Bombers—Pontoon Hand Hole Covers—Compression Shock Absorbers Supersede Tension Cords—Rubber Covers for Drop Tanks—Other Rubber Uses

APPLICATION of rubber in airplanes is extending with the development of the many types of machines and now the different uses number fully three dozen. While many of them are identical in most of the types, others are special for bombing planes and hydroplanes. In the structural development of airplanes the use of rubber for weatherproofing wing covering fabric has been eliminated in favor of pyroxylin dope, which is better suited to the purpose because it not only excludes moisture from the fabric but makes it taut as well on the wing structure.

Molded rubber pieces formerly placed between crossed wires in tension are discontinued, and in the new construction chafing of the wires is not only eliminated by placing a wrapping of friction tape between and around the crossed wires but in addition they are bound securely together with streamline effect. While these and other applications of rubber have been superseded in the general developments of airplane building many new uses have been perfected.

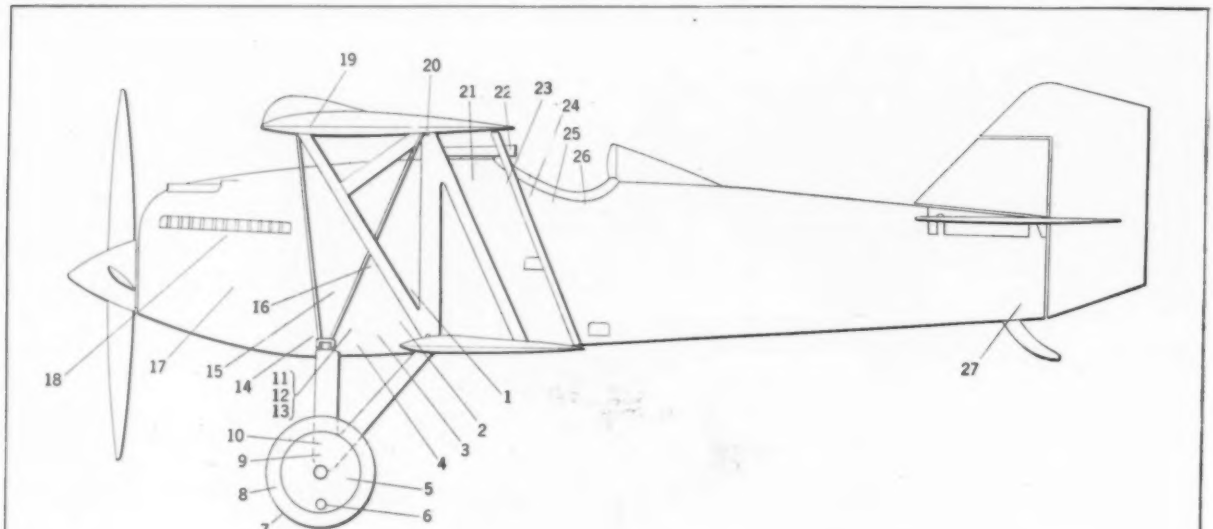
In airplane construction every consideration is given to the elimination of wind resistance by including as far as possible within the fusilage all structural features and accessory items, and streamlining everything not so inclosed. The basic principles vitally affect conditions of speed and power and influence design in the smallest details.

The relative locations of the rubber parts found in airplanes are shown by the numbered references on the outline side view of an army plane seen in Figure 1.

### Types of Modern Airplanes

Four types of airplanes built by a prominent concern[1] are here illustrated. These types shown in Figure 2 have considerable popular interest at the present time, particularly the military pursuit plane, A, used by Lieut. Maughan in his recent successful coast to coast flight between dawn and dusk. In view of the recent establishment of a 36-hour coast-to-coast mail service by airplane the night flyer, B, has special interest. The bomber, C, is interesting as an engine of destruction, with great load carrying capacity, speed, and fighting power. It is capable of maintaining a speed of 100 miles per hour on the full load. Its weight, light, is 9,700 pounds and its military load 4,300 pounds. This includes bombs, guns, ammunition, and crew of six men, whose stations are respectively pilot, observer and mechanic, bomber, gunner, radio expert, and photographer.

The hydroplane, D, is the latest development of the navy type flyer that made the non-stop flight across the Atlantic. In this instance take-off and landing are made from the water and plywood pontoons are substituted for tires. Shock absorbers are therefore absent, although practically all other applications of the army plane are retained.




*Curtiss Airplane & Motor Corporation.*

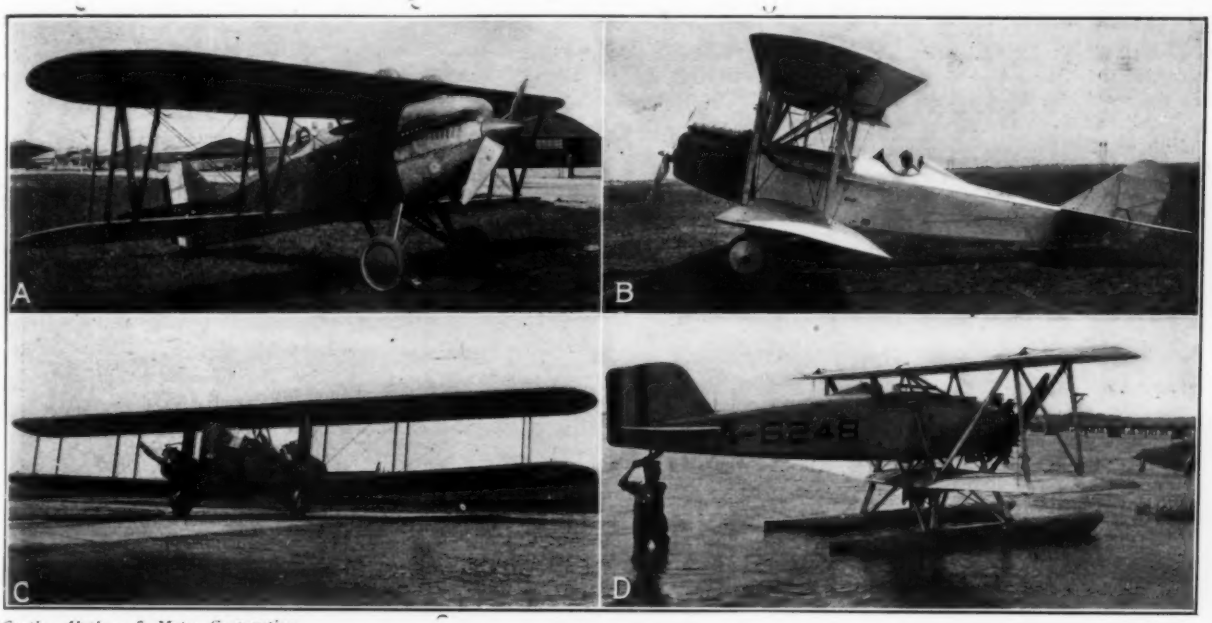
(1) AIR HOSE CONNECTION. (2) WATER HOSE CONNECTION. (3) GASOLINE HOSE CONNECTION. (4) OIL HOSE. (5) WHEEL COVER. (6) WHEEL COVER HAND HOLE RINGS. (7) PNEUMATIC TIRE. (8) INNER TUBE. (9) STRIP IN TOP OF AXLE HOUSING. (10) TENSION CORD AXLE SHOCK ABSORBER. (11) CRASH-PROOF TANK COVER, IN TWO PARTS. (12) RUBBER CEMENT JOINING NO. 11. (13) BULLET-PROOF TANK COVER. (14) COMPRESSION DISK SHOCK ABSORBER FOR LANDING GEAR. (15) RUBBER INSULATED WIRING. (16) FRICTION TAPE BINDING AND STREAM LINING CROSSED TENSION WIRES. (17) ENGINE WATER JACKET SEALING RINGS. (18) COOL PIPE FLANGE GASKETS. (19) FLARE LIGHT BRACKET TENSION CORD SPRING. (20) SELF-CURING CEMENT PLUGS WHERE WIRE ENTERS WINGS. (21) GROMMETS IN FIRE WALL. (22) SOFT RUBBER GUARD OVER TELESCOPE EYEPIECE. (23) SPONGE RUBBER CUSHIONS IN COMPASS GIMBALS. (24) HAND RUBBER KNOBS ON CONTROL LEVERS. (25) CONTROL STICK GRIP. (26) OXYGEN TANK TUBING. (27) TAIL SKID SHOCK ABSORBER.

**Fig. 1. Applications of Rubber in an Army Airplane**

[1] Data and illustrations supplied by the Curtiss Airplane & Motor Corporation, Garden City, Long Island, N. Y.

### Rubber in Bombing Planes

In addition to the many rubber parts shown in the illustration there are others used only on planes for special duty, such as bombing, night flying, naval flying, etc. For example, in the construction and equipment of the bombing plane rubber appears as channel strips in the glazing of windows in the bombing sections and machine gun turret; endless band of tension cords as a spring to raise turret machine gun; hard rubber wheel for reeling up aerial wire; parts of the radio set; and the camera outfit is mounted in sponge rubber cushioned gimbals.




*Curtiss Airplane & Motor Corporation.*

**Fig. 2. (A) Pursuit Dawn-to-Dusk Ship (B) Night Mail Plane (C) Bombing Plane (D) U. S. Navy Hydroplane**

### Hand Hole Covers for Hydroplane Pontoons

Along the sides of the plywood pontoons of hydroplanes a series of elastic automatic hand hole covers are a recent application of rubber, displacing metal covers and gaskets. The rubber covers are molded with a double edge, one of which springs over the raised brass hand hole ring sufficiently tight to exclude entrance of water to the pontoon while the other edge overlaps the raised hand hole, conforms tightly to the surface of the pontoon, and affords a streamline effect.

### Compression Shock Absorbers

The use of airplanes in tropical and summer flying has shown that rubber under tension is not as durable as a shock absorber as rubber under compression, therefore landing gear has been redesigned and in place of the exterior rubber tension cord shock absorbers a compression form has been substituted and placed within the fusilage. The latter form comprises 20 high grade rubber disks each about ½ x ½ x 5 inches, arranged in two groups of ten each on a vertical spindle. As the wheels touch the ground in landing they tend to spread apart under the weight of the machine and in doing so the rubber disks are sharply compressed, absorbing the blow and reacting to normal between successive shocks.

### Crash Covers for Drop Tanks

To eliminate injury or death by fire to flyers airplanes are now designed to carry the gas tanks supported in such manner that the tanks can be released and dropped from the plane in case of emergency where there is danger of fire.

The problem of retaining the gasoline within the tank when it crashes to the ground has been met by the rubber crash cover. This consists of a pair of rubber boxes enclosing the tank from either end and telescoping together around it half way between either end. Each half cover has heavy duck insertion with tough rubber outside and heavy bottom of the same stock. The top edges of the covers are separated into two plies, the inner one of which carries a row of grommets with lacing cord for uniting the grommeted edge of the corresponding cover. After lacing the covers upon the tank their outer plies are cemented to place over the lacing and make the joint leak-proof.

Tests have demonstrated that although the metal tank is destroyed by dropping from aloft, the gasoline content is prevented from leaking by the strength and resilience of the crash-proof cover.

### Landing Flare Light

A feature of the night mail planes is the magnesium flare for illumination of the ground in case of landing after dark. The flare is an electrically fired pyrotechnic device mounted at extremity of the upper wing tip on a folding bracket. The latter is held automatically in position by the power of a tension cord comprising many rubber threads stretched and bound together by a braided cotton covering, familiar in athletic exercising apparatus.

It may be said that in perfecting the design of airplanes of every type, rubber is relied upon increasingly for use at many important and critical points in construction, equipment and operation, as shown by the lengthening list of applications here mentioned as compared with those cited in former articles[2] on this topic published in this journal.

[2] "Rubber in Airplane Construction." December, 1918, 132-133.
"Rubber Materials in Airplane Construction." September, 1922, 801-802.

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APPROXIMATELY 1,000,000 AUTOMOBILE TIRES ARE USED annually in the state of Virginia, this representing an expenditure of $20,000,000 for casings and $2,000,000 for tubes.

# The Manufacture of Solid Tires[1]

## Tubing Treads—The Cooling Tank—Water Cooling Advantages—Cutting and Cementing Tire Lengths—Rim Preparation—Applying Treads—Curing Control

THE SERVICE conditions imposed upon solid tires are unusually severe. They can be successfully met only by combination of standardized materials and processes checked by frequent inspection and test. Added to the rubber technology of solid tires are the requirements of volume production, which involve the correlated movement of building and conveying machinery. This difficult problem has been solved very successfully by one of the leading American rubber companies in a manner which comprises some unique and exclusive features evident by reference to the illustrations. These are views in the same room in which successive steps in solid tire building appear.

Each step in the manufacturing process is checked by careful inspection to maintain unvarying standard of quality, uniformity of processing, and continuity of production.

### Tubing Solid Tire Treads

The rubber stock, well aged for the recovery of its "nerve," is warmed by a group of warming mills sufficient in number to continuously feed the powerful tubing machines, from the die of which double tire sections are extruded. This double section has the form of two tire sections set base to base. The object in this double extrusion is to produce a whorl-like grain in the rubber, resembling the lines of growth in a tree trunk. Thus, when the double tire section is separated the whorl of the grain follows parallel to the outline of tire section and adds to its strength.

### The Cooling Tank

The usual method of handling extruded rubber forms is to place them on trays or racks for air cooling and aging. This practice has the serious disadvantage that the warm soft rubber becomes distorted in shape as it rests in contact with underlying irregularities.

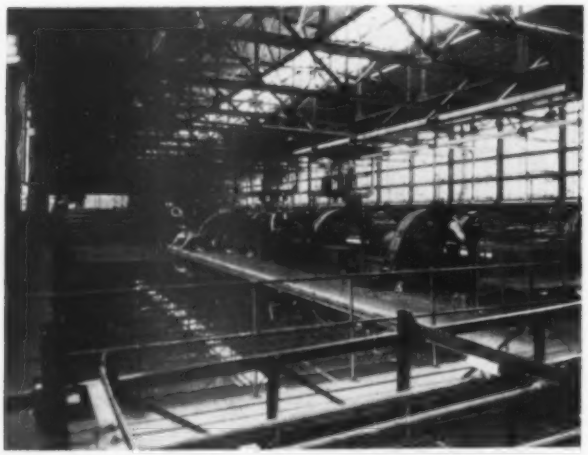

**Fig. 1—Cooling Tank for Extruded Solid Tires**

In the system of tire manufacture here described the soft extruded rubber is rapidly cooled without distortion by means of the cooling tank shown in Figure 1. This tank is 84 feet long, 16 feet wide, and 4 feet deep. It is supplied with running water so that its temperature varies only slightly. An endless belt receives in individual trough-like compartments cut lengths of the hot extruded tires and conveys them down the length of the tank at a rate which allows the rubber to thoroughly cool.

### Advantages of Water Cooling

The difference in the specific gravity of the solid tire tread and the water is so slight that in passing through the cooling tank the sections of rubber are almost suspended in the water, with the advantage that the tires cool uniformly, thoroughly, and without distortion. By proper use of a cooling tank system every tread retains its designated shape, and when severed each half of the double tire is identical with the other. Furthermore, this system reduces porosity to a minimum, consolidating the stock, eliminating gas pockets and sponginess. In addition, the probability of scorching is almost entirely avoided. Another advantage claimed for the cooling tank process is that the water bath over a period of time has a pronounced tendency to preserve the inherent fiber in the tread.

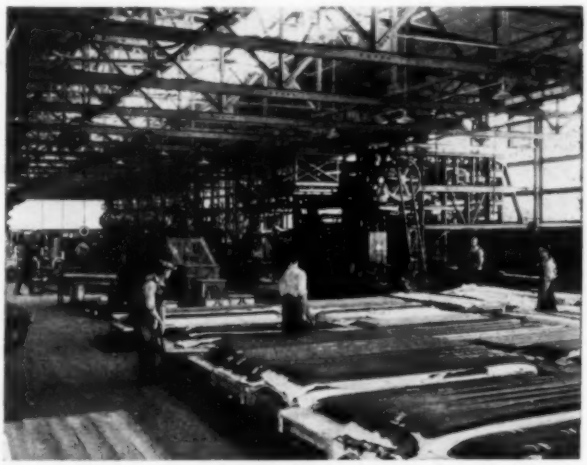

**Fig. 2—Cementing and Conveying Solid Treads to Tire Building Section**

### Cutting and Cementing Tire Lengths

As the endless belt reaches the far end of the cooling tank it conveys the solids to a series of conveying rolls, which move each tread in turn to a revolving knife which cuts through the center of the double tread, severing it into two tires which, if placed together again, would be bottom to bottom.

Following inspection, the ends of the treads are beveled or skive cut with a knife after being accurately gaged for subsequent joining on the tire rim. The cut sections are again inspected for length and weight and given another aging period.

Following the "rest period" the treads resume their journey in the process of manufacture, shown in Figure 2. The bottom of each tire is roughed to assure strong adhesion with the cement which is then applied. The treads are placed on a series of conveying rolls moving over evenly heated radiators and a second coat of cement is applied on the base. As a safeguard the con-

[1] Data and illustrations supplied by Dunlop Tire & Rubber Co., Buffalo, New York.

veyor is electrically driven at constant speed, assuring that the tread and cement are dried uniformly and automatically. In short, the hazard of any tread receiving more intensive treatment than the rest is entirely eliminated. After each tread has received its

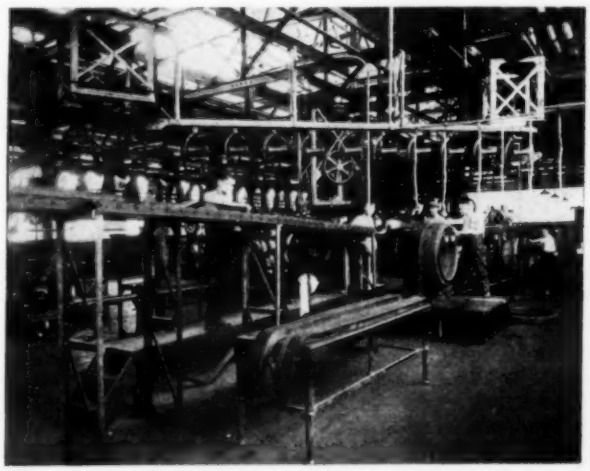

**Fig. 3—Applying Treads to Rims**

second application of cement the conveying rolls move it to a turret for application to its steel base, or rim.

### Preparation of Steel Rims

Important as any other step in the process is the union of the tread to the steel base or rim by means of hard rubber. This is preceded by preparatory work on the individual rims. The face of each rim is thoroughly inspected as to its corrugation and under-cutting in pyramid shape. It is then placed in a steam vulcanizer where all dirt or foreign matter is loosened and subsequently removed by brushing with a steel brush on a revolving wheel. Then as additional precaution it is washed with gasoline.

After this treatment the rim is ready for several coats of special hard rubber cement, which are allowed to dry thoroughly before a heavy ply of raw hard rubber stock is calendered upon the adhesive surface filling every corrugation and all undercuts, leveling the rim surface to the tops of the flanges.

### Applying Treads to Bases

Placed on conveyors, as shown in Figure 3, the rims pass to the assembly turret, and while on the way are coated twice with cement. When this has "set," vulcanite is applied. By this time the conveying movement has caused the rims and treads to meet at the applying point. Here two more coats of cement are applied, and the tire is fitted upon the face of the band. From this point the tires move by conveyor to the pit, where they are weighed and inspected again prior to being placed in the molds and lowered into the vulcanizers for curing.

### Curing Control

In this last step in the manufacture of solid tires considerable stress is laid on instrument control. A few years ago steam gages were used exclusively, but these often were misleading, inasmuch as they registered pressure only. Constant pressure did not mean necessarily that a tire was being correctly vulcanized. Now automatic steam control with recording thermometers both regulate and designate the temperature to within one degree, furnishing a check during the progress of the cure and a permanent record for future reference.

This system of solid tire manufacture well illustrates the application of typical modern engineering and machine processes, successfully eliminating the uncertainties of the former arduous and expensive hand building processes, which are wholly inadequate for the production of good solid tires even in the smaller sizes.

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## Meeting of Crude Rubber Committee, A. C. S.

A meeting of the Crude Rubber Committee of the Rubber Division, American Chemical Society, was held at Atlantic City, New Jersey, June 23, 1924. It was deemed advisable to request the appointment to the committee of some member of the Crude Rubber Committee of the Rubber Association of America in order that the work of both committees may be correlated.

The work on test methods is well under way but will proceed slowly since it is important that crude rubber importers and dealers be kept in touch with the work.

### Answers to Questionnaire

Replies to the Committee's questionnaire addressed to rubber manufacturers and chemists showed a large majority in favor of testing every lot of crude rubber, while a few report testing special and questionable lots only. All answers agree that rubber is used according to results shown by the tests. In general, sampling methods follow closely the lines recommended in the report of the committee.

Regarding the relative importance of pure evaluation as compared to suitability tests answers were evenly divided. In regard to standardization of grades, all insist that the first grades of latex crêpe and smoked sheets should be rigidly standardized, and many favor a reduction of the number of second grades and their standardization. Several state that only the first grades can be standardized and that off grades must be subject to individual contracts.

### Plan of Work

The Committee will endeavor to outline evaluation methods for sampling, breakdown tests, plasticity, viscosity, rate of cure and rubber quality. The work so far has of necessity been preliminary and tentative. They have endeavored to obtain the opinion of individuals and of the division as a whole for their guidance and in order to stimulate general interest in crude rubber testing problems.

The Committee recognizes that quality is largely determined by rate of cure and that the setting up power of various accelerators has an important influence on the quality of the stocks produced. It has been decided that the work in the near future shall consist of standardization of the pure evaluation methods tentatively proposed together with researches covering the question of quality as affected by rate of cure of the rubber, and accelerators which might be selected as components of the quality test mix. Rubber samples will be distributed among the various members who will take up this work, which has been apportioned as follows:

Messrs. Sanderson and Van Valkenburgh will collaborate on researches with our methods for breakdown, plasticity and viscosity. Mr. Cranor will study the quality of various rubbers, including a series of samples of widely divergent rates of cure, specially prepared by Dr. O. de Vries. For this work, the samples will be tried in the No. 1 and No. 2 test formulas, and in typical mechanical, tire and shoe stocks. Mr. Sturtevant will make suitability studies, using mechanical stocks and the test forms on samples to be sent out by Mr. Sanderson, who with Dr. Van Valkenburgh will try the same rubbers in the test mixes, and in practical tire stocks. It is hoped soon to have data covering other accelerators as compared to Hexa, also a refinement of the breakdown test. This data will be the basis of the next report to the division.

# Automatic Production of Hard Rubber Radio Parts[1]

## Advantages of Hard Rubber—Diamond Pointed Tools—The Automatic Screw Machine—Making Radio Parts—A Field for Development

THE PHENOMENAL increase of popular interest in radio reception is well known. It is estimated that in 1923 the radio business amounted to $150,000,000 and that within a few years the public will be spending $500,000,000 a year on radio. The number of radio sets now in service is estimated at 2,500,000, in use daily by a radio audience of perhaps 10,000,000 persons. It is further estimated that within five years this audience will probably increase five fold in number and sets in proportion.

### Advantages of Hard Rubber in Radio

The advantages of hard rubber for radio instrument parts has been referred to in several preceding articles in THE INDIA RUBBER WORLD.[2]

Attention is here called to the possibility of utilizing the machining characteristics of hard rubber by applying automatic screw machines for volume production of standard radio parts such as knobs, binding posts, etc., which are now made extensively in molded phenolic resins.

One of the greatest drawbacks to the more extensive use of automatic screw machines in hard rubber working is the cutting quality of excessively mineralized grades of this material. Such impurities rapidly dull the cutting edges of steel tools, necessitating resharpening them frequently and obliging an operator to devote all his time to one machine, thus defeating the object of the automatic machine in many instances. Pure hard rubber, whether made of hard rubber dust or new stock does not present this difficulty.

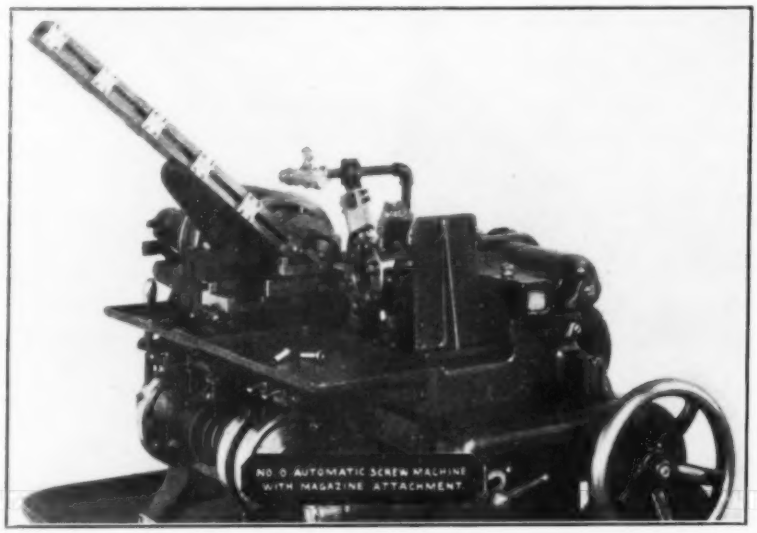
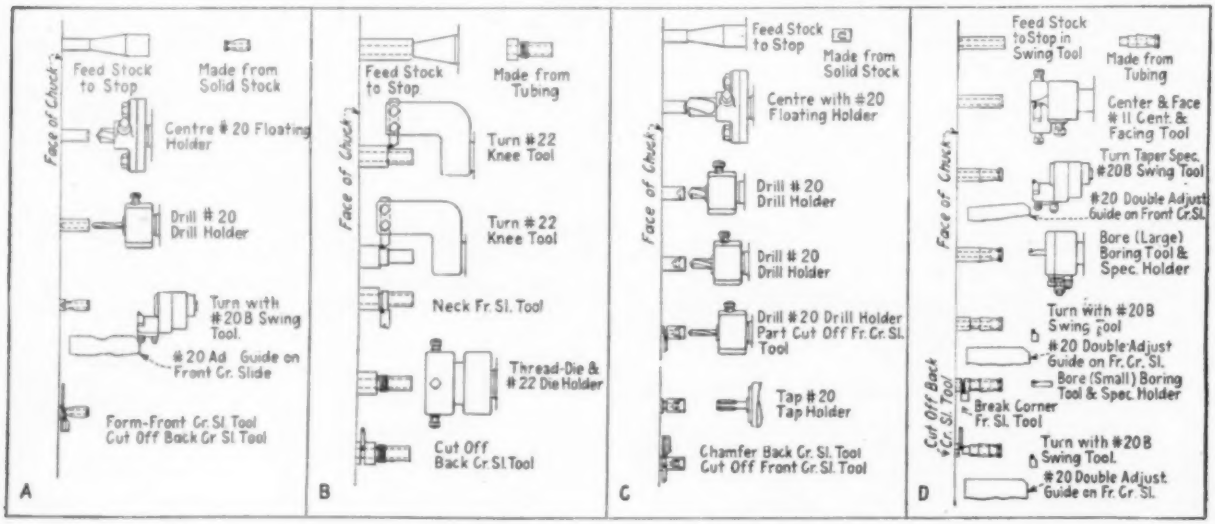



Fig. 1—Automatic Screw Machine with Magazine Feed

Diamonds have been applied to this work with remarkable success and, where practical, the use of them is recommended. These tools consist of low carbon steel blanks with diamonds brazed in them for the cutting edge. Such tools, however, are only applicable to plain work, as it would not only be impracticable to make them for intricate forms but the cost would be prohibitive. These tools greatly outlast steel tools and the additional invest-


Face of Chuck
Feed Stock to Stop
Made from Solid Stock
Centre # 20 Floating Holder
Drill # 20 Drill Holder
Turn with # 20 B Swing Tool.
# 20 Ad Guide on Front Cr. Slide
Form-Front Cr. Sl. Tool Cut Off Back Cr. Sl. Tool
A
Feed Stock to Stop
Made from Tubing
Turn # 22 Knee Tool
Turn # 22 Knee Tool
Neck Fr. Sl. Tool
Thread-Die & # 22 Die Holder
Cut Off Back Cr. Sl. Tool
B
Feed Stock to Stop
Made from Solid Stock
Centre with # 20 Floating Holder
Drill # 20 Drill Holder
Drill # 20 Drill Holder
Drill # 20 Drill Holder Part Cut Off Fr. Cr. Sl. Tool
Tap # 20 Tap Holder
Chamfer Back Cr. Sl. Tool Cut Off Front Cr. Sl. Tool
C
Feed Stock to Stop in Swing Tool
Made from Tubing
Center & Face # 11 Cent. & Facing Tool
Turn Taper Spec. # 20 B Swing Tool
# 20 Double Adjust Guide on Front Cr. Sl.
Bore (Large) Boring Tool & Spec. Holder
Turn with # 20 B Swing Tool
# 20 Double Adjust Guide on Fr. Cr. Sl.
Bore (Small) Boring Tool & Spec. Holder
Break Corner Fr. Sl. Tool
Cut Off Back Cr. Sl. Tool
Turn with # 20 B Swing Tool.
# 20 Double Adjust. Guide on Fr. Cr. Sl.
D

A—A Handle B—A Connection C—Tapped Bushing D—Pen Section

Fig. 2.—Details of Machining Hard Rubber Articles

[1] Data and illustrations supplied by Brown & Sharpe Manufacturing Co., Providence, R. I.

[2] "Hard Rubber in Radio Instruments," April 1, 1923, 419-420. "Rubber Parts in Radio Instruments," April 1, 1924, 443-445.

ment is well worth the cost. Diamond tools are now being used extensively in connection with automatic machines and it only remains for the producers of hard rubber to develop a grade of material suitable for steel tools in order to admit the greater use of automatic machines.

### The Automatic Screw Machine

Pieces to be machined are usually magazined for this work in a chute type of magazine as shown in Figure 1, and a double movement cross slide is used in conjunction with the magazine chute. This operates as follows: A carrier is mounted on the cross slide and as the blank is brought in line with the opened chuck the inserting tool in the turret pushes it into the chuck.

### Making Hard Rubber Radio Parts

The application of automatic screw machines to producing objects in hard rubber is well illustrated in Figure 2, A, B, C, and D, which show the successive operations on four different hard rubber pieces made from both solid stock and tubing. The diamonds are indicated by black points on the tools.

Illustration A represents a handle. The operations indicated are: feed stock, center, drill, turn, form and cut-off. The operation of turning is interesting, the shape of the handle being produced by the use of a swing tool in the turret. This tool consists of a stationary shank on which is mounted a swing arm. The movement of the arm is actuated by a formed guide on the front cross slide.

Illustration B represents a connection made from hard rubber tubing. On this particular part the hole is not finished and the only operations are turning and threading. For the turning operations knee tools with diamond inserts in the blades are used. The groove back of the thread is made by a forming tool from the cross slide. The threading is done with a round split adjustable tool steel die.

Illustration C shows a tapped bushing from solid stock and D is a pen section made from tubings. The operations upon these parts are sufficiently clear not to require detailed description.

In order to successfully handle hard rubber in automatic screw machines it is essential that the stock be uniform in size, as it is not practicable to handle a variation of more than .005 or .006 of an inch with the spring collet arrangement.

In pen manufacture some parts are molded, while others are in either tubing or rod. When molded pieces are used the hole is drilled or sized in a hand machine and the pieces mounted on a mandrel for grinding. Rubber rods and tubing are sized before being machined in the screw machine. This is usually done on equipment specially designed by the manufacturer himself.

### A Profitable Field for Development

From the preceding description of successful applications of automatic screw machines to working hard rubber it would seem that their use might be profitably extended to the making of various hard rubber articles for electrical and mechanical purposes as well as many small parts of radio receiving sets.

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### AUSTRALIA AND NEW ZEALAND TIRE MARKET

Both Australia and New Zealand represent rapidly developing markets for American-made tires and tubes. Pneumatic casings imported from the United States by Australia in 1921 reached a value of $224,731, the totals also rising steadily from $667,881 in 1922 to $841,794 in 1923. Similar purchases by New Zealand totaled in 1921 $542,145, in 1922 $692,137, and in 1923 $955,591.

Total imports by Australia of American-made pneumatic and solid tires and inner tubes were estimated at $260,844 in 1921, $842,500 in 1922, and $1,150,357 in 1923. The corresponding figures for New Zealand are: $614,703 in 1921, $832,339 in 1922, and $1,228,165 in 1923.

## Originator of the Cord Tire

ALTHOUGH officially designated as consulting engineer of the Hewitt Rubber Co., Buffalo, New York, John Fullerton Palmer likes better to term himself prophet and promoter of right ideas in cord tire design and manufacture. Known throughout the world as the patentee of the original cord tire, and an important factor in its subsequent development and production, he may do so with very pardonable pride, and it is cheering to realize that at the age of sixty-three years young his actively inventive mind is still going strong on the problems of rubber manufacture.

J. F. Palmer

Mr. Palmer represents a fine type of the American self-made man. He was not brought up in the rubber trade, and had a varied career before becoming identified with it. Born on a farm in Iroquois County, Illinois, in 1860, he completed a common school education and learned the marble cutting trade in which he was engaged from 1873 to 1876, when he went through high school. Thereafter through reading, study and keen observation his broader, practical education proceeded rapidly and, he says, is still going on.

Going to Chicago, Illinois, he was successively clerk and messenger for the American Express Co.; shipping clerk, erector and salesman for A. H. Andrews & Co., school and office furniture; clerk, draftsman, designer and salesman for Thos. Kane & Co., school, church and theater seating.

The year 1891, at about the beginning of the bicycle boom, found him in charge of the bicycle department and the inventor of the "all warp" or parallel thread fabric first used in racing tires on bicycles in 1893. Modern cord tires for automobiles owe their origin to this invention. The following year Mr. Palmer went on his own, organized the Palmer Pneumatic Tire Co. for the manufacture of tires embodying his thread fabric in America, and in 1893 organized the British company, Palmer Tyre, Limited, to which he sold his foreign patents.

The Palmer tire as first made was essentially a single tube racing tire, but the principle was gradually applied in subsequent patents to tires for all purposes, including cord tires for automobiles and airplanes, and the cord inner tube. Palmer tires have been particularly prominent in the British trade. The Palmer patents were the basis of much litigation but in the main were sustained, and they have been supplemented by a number of other patents, as for example those covering the Silvertown cord tire, for further carrying out the original idea.

Application of the parallel thread and cord principle of tire construction to tires for various purposes involved many process and machinery patents covering the preparation of the cord and laying it to form the tire carcass which Mr. Palmer has to his credit, not to mention in detail those covering several miscellaneous factory machines, tire valves, tools, rims and fastenings.

Palmer tires are still being made in England by Palmer Tyre, Limited. In America they were at first sold by The B. F. Goodrich Co., under license, and later by the Palmer Pneumatic Tire Co., although from the outset The B. F. Goodrich Co. was the sole manufacturer. In 1898 the Palmer tire patents for the United States and the sole right to manufacture the Palmer tire in this country were bought by the Goodrich company and the Palmer selling company ceased to be a factor in the trade. Since that time Mr. Palmer has devoted himself to much needed rest and consulting work.

In 1908, following the filing of the applications for his later

tire patents, the Palmer web tire for electric vehicles was brought out by the Goodrich company, and was the forerunner of the multi-ply type of cord tires, now the universal practice in cord tire building in this country and Europe with the exception of the English Palmer company which still holds to the original two-ply construction and clincher rims. It is proper to note here that the English company first used the word "cord" as descriptive of the larger cords of automobile tires to distinguish it from "thread," used to describe the smaller cords in bicycle tires.

In 1910 an airplane tire was brought out as a regular product which in construction was a modification of the Palmer bicycle tire, being smaller in diameter but larger in cross-section. The Palmer was probably the first tire of cord construction to be used for aviation purposes in England, and it has ever since held a prominent place among airplane tires, having been used on the famous Handley-Page bombing planes in the World War.

Mr. Palmer was always an exponent and advocate of low air pressure in tires, in fact made, used, and raced them years before balloon tires were thought of as such. In fact, Mr. Palmer has pioneered every major development in pneumatic tires that the years have since adopted in the trade, and he promises more to come in the near future.

# Activities of the Rubber Association of America

DURING July the activities of the Association were reduced to a minimum on account of the summer period when members are usually away on vacations. All committee and division meetings scheduled for July that could be carried over were postponed until August or September.

### May Production, Inventory and Shipments of Tires

As in April, the May production, inventory and shipments of cord casings all exceeded those for the same period last year, according to compilations prepared by the Rubber Association of America. The decline continues, however, in the production, shipment, and inventory figures for fabric casings, as well as for solid and cushion tires, and inner tubes, although May shipments of the latter commodity, were somewhat larger than shipments a year ago.

It is of interest to note that statistics for balloon tires are now included, the figures for cord casings being as follows: Inventory—May 31 (1924), high pressure, 3,727,795, and balloon, 569,624; production—May, high pressure, 1,650,366, and balloon, 564,030; shipments—May, high pressure, 1,932,408, and balloon, 282,596. Corresponding figures for inner tubes are: Inventory—May 31 (1924), high pressure, 8,296,177, and balloon, 465,635; production—May, high pressure, 3,276,660, and balloon, 467,448; and shipments—May, high pressure, 3,435,021, and balloon, 213,469.

The total production of high pressure and balloon casings for the first five months of 1924 is estimated at 10,761,157, while shipments for this period are 9,521,410 casings. Production of fabric casings for these five months reaches 5,510,565, and shipments, 4,928,069. Solid and cushion tire production is estimated at 316,347 and shipments 280,495. Corresponding figures for these five months show a production of inner tubes reaching 19,953,890, and shipments at 17,675,042.

In general the May, 1924, inventory for cord casings increased 9.2 per cent, as compared with May, 1923; production increased 1.2 per cent; while shipments also increased 18.4 per cent. Fabric casings inventory for May, 1924, showed a decrease of 13.9 per cent, as compared with the corresponding month of the year previous; an increase of 0.5 per cent in production, and a decrease of 34.6 per cent in shipments. The figures for the May, 1924, inventory, production, and shipments of solid and cushion tires also represented decreases of 29.8 per cent, 35.1 per cent, and 29.9 per cent respectively. Decreases of 5.7 per cent and 13.2 per cent respectively are also noted in the inventory and production figures for inner tubes, although as compared with May, 1923, there is an increase of 4.5 per cent in figures for shipments.

### Inventory—Production—Domestic and Foreign Shipments of Pneumatic Casings—Inner Tubes—Solid Tires

| | Pneumatic Casings | | | | Inner Tubes | | | | Solid and Cushion Tires | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 | No. Mfrs. Reporting | Inventory | Production | Shipments | No. Mfrs. Reporting | Inventory | Production | Shipments | No. Mfrs. Reporting | Inventory | Production | Shipments |
| Twelve months, 1922 | .. | 58,401,086 | 30,698,139 | 29,221,899 | .. | 72,463,938 | 38,137,181 | 36,656,435 | .. | 2,320,650 | 786,603 | 688,845 |
| Twelve months, 1923 | .. | 67,448,419 | 33,933,936 | 32,991,810 | .. | 87,807,770 | 45,128,083 | 43,554,963 | .. | 3,013,674 | 692,148 | 690,090 |
| 1923 | | | | | | | | | | | | |
| May | 57 | 6,906,694 | 3,659,986 | 2,757,764 | 57 | 9,292,223 | 4,317,537 | 3,414,115 | 10 | 268,323 | 77,288 | 67,147 |
| June | 55 | 7,040,600 | 2,956,943 | 2,502,185 | 54 | 8,924,326 | 3,590,011 | 3,581,060 | 10 | 283,425 | 72,445 | 52,126 |
| July | 54 | 6,471,124 | 1,992,989 | 2,539,425 | 52 | 7,527,281 | 2,666,354 | 3,942,247 | 10 | 263,891 | 42,345 | 45,219 |
| August | 58 | 6,058,387 | 2,355,915 | 2,807,432 | 53 | 6,950,578 | 3,577,922 | 4,304,034 | 10 | 262,810 | 48,141 | 45,925 |
| September | 60 | 5,397,557 | 2,029,581 | 2,623,775 | 55 | 6,457,455 | 3,254,575 | 3,683,574 | 10 | 249,379 | 37,074 | 45,971 |
| October | 59 | 4,876,352 | 2,361,340 | 2,819,583 | 55 | 6,898,425 | 3,855,244 | 3,595,737 | 10 | 234,945 | 37,285 | 48,065 |
| November | 55 | 4,689,329 | 2,399,725 | 2,456,296 | 53 | 6,693,639 | 3,451,716 | 3,422,426 | 11 | 213,686 | 32,577 | 49,471 |
| December | 56 | 4,329,300 | 2,437,148 | 2,603,617 | 52 | 6,318,446 | 3,288,665 | 3,497,472 | 10 | 178,088 | 34,937 | 62,408 |
| 1924 | | | | | | | | | | | | |
| January | 56 | 4,808,084 | 3,220,292 | 2,838,570 | 51 | 6,720,247 | 3,887,959 | 3,542,500 | 10 | 182,782 | 53,604 | 47,295 |
| February | 55 | 5,265,133 | 3,278,674 | 2,866,626 | 50 | 7,339,307 | 4,067,631 | 3,397,668 | 10 | 188,519 | 60,646 | 52,965 |
| March | 57 | 5,763,084 | 3,427,692 | 2,990,872 | 53 | 8,157,704 | 4,218,950 | 3,500,105 | 10 | 203,608 | 68,662 | 61,482 |
| April | 60 | 6,164,226 | 3,307,478 | 3,013,441 | 54 | 8,627,343 | 4,035,242 | 3,586,279 | 10 | 212,419 | 69,534 | 58,486 |
| May | 58 | 6,313,193 | 3,038,586 | 2,769,970 | 53 | 8,761,812 | 3,744,108 | 3,648,490 | 10 | 188,345 | 50,145 | 49,796 |

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipment" prior to January, 1924, includes only stock forwarded to a *purchaser* and not stock forwarded to warehouse, branch, on consignment basis, or abroad. After January, 1924, shipments abroad are included in these figures.

*(Compiled by The Rubber Association of America, Inc.)*

# Willard Desulphurized Rubber Products

## Desulphured Rubber from Scrap—Black Auto Top Dressing—Rubber Paints—Mechanical Goods—Hard Rubber Jars—Willard Patents

THAT it has succeeded in producing a super reclaimed rubber from which the combined sulphur is wholly extracted, on an economical commercial scale, is the claim made by the recently incorporated Willard Rubber Products Co., of San Diego, California.

### Auto Top Dressing

The first article which the Willard company has begun to make is a black automobile top dressing for rubber and pantasote covers, which, it is said, imparts not only a lustrous finish but will not rub off, fade, or crack. When the volatile solvent evaporates, a thin film of rubber is left, which is air cured by the vulcanizing agents incorporated with the rubber.

### Rubber Paints

Another article is a rubber paint which, it is held, is superior to linseed oil paint inasmuch as it will not saponify with alkalies as do pigments mixed with linseed oil. On seaboard, it is pointed out, salt air often induces rapid deterioration of ordinary paint, as when the chlorine in the atmosphere laden with chloride of sodium vapor dissociates and leaves the sodium in hydroxide or caustic form to combine with the oil and form a true soap to be washed off by rain. The binder being gone, the lead or other mineral pigments then pulverize. It is likely, too, that the rubber will provide a surface equal to that afforded by linseed oil under the most favorable conditions, and that will be as elastic, stretching and contracting as readily as the film produced by any good drying or hardening oil.

While mention is not made of the effect of this rubber solution as an emulsifier, doubtless it would help to hold oils and pigments in suspension quite as well as the rubber solutions now used in some ready-mixed paints. It is claimed that such solution can be produced much cheaper than linseed oil. Among the paints being made are: White, for marking auto parking spaces and safety zones; red for traffic marks; paint for waterproofing concrete; anti-barnacle paint for ship bottoms, and interior and exterior paints in all colors and shades.

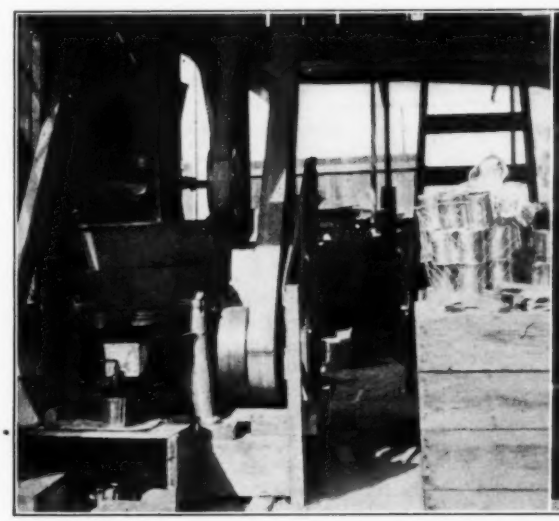
Patents are pending not only for various gums for varnishes and enamel paints but also for a synthetic gum made from the new material to take the place of chicle for chewing gum.

### Rubber-Fiber Mechanical Goods

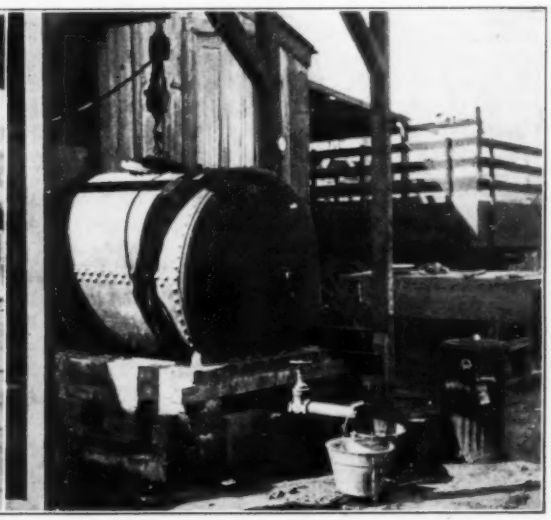
Articles of rubber and fiber can be readily made by grinding up old tire carcasses, devulcanizing the rubber in the presence of the fiber without destroying the latter, drying, and sheeting the combined rubber and fiber with sulphur, accelerators, pigments, compounds, etc.; and then revulcanizing the composition into such articles as floor covering, soles and heels, imitation leather, battery jars, all kinds of mechanicals, tonneau and running board mats, auto tops, etc. The cost of rags and flock and of extra labor in handling the same in making fiber soles would thus be eliminated.

### Hard Rubber Battery Jars

Hard rubber for battery jars made of this rubber and fiber, Mr. Willard states, has been tested in the General Electric Co. laboratories and is said to have stood up to 15,000 volts for insulation puncture, and he was advised that he could fairly claim 10,000 megohms resistance for the material. Separators for one standard battery are made by inserting fibers in rubber plates; Mr. Willard says that he would make them by not taking out the fibers.



Battery of Paint Mills



The Steam Digester

### The Willard Patents

The following patents under which the company are working were all issued to Cyrus Field Willard, of San Diego, California:

No. 1,322,077. Process for devulcanizing rubber. Filed May 31, 1917. Serial No. 171,923. 16 claims (Cl. 18-52).

(1) The process of devulcanizing vulcanized rubber which comprises boiling it with a liquid of which a large portion is a

hydrocarbon of a viscid and gummy nature, the hydrocarbon forming a yeasty froth on the surface of the liquid and having an affinity for sulphur under the conditions created, greater than the lessened affinity for sulphur possessed by the rubber, whereby combined sulphur will be liberated from the rubber.

No. 1,322,151. Devulcanizing process and product thereof. Filed March 18, 1918. Serial No. 223,208. 20 claims (Cl. 18-52).

(1) The process of devulcanizing rubber which comprises boiling vulcanized rubber with a viscous mixture of a tar and a flux of a liquid hydrocarbon in the presence of water.

No. 1,322,152. Process for devulcanizing vulcanized rubber. Filed Dec. 5, 1918. Serial No. 265,342. 7 claims. (Cl. 18-52).

(1) A process of devulcanizing vulcanized rubber which comprises effecting the liberation of more or less of the combined sulphur by boiling it with an emulsoid colloid solution and a detergent or cleansing solution.

## Interesting Letters from Our Readers

### The Question of American Rubber Planting

TO THE EDITOR:

DEAR SIR: The article, "What It Would Cost America to Produce Her Own Rubber," by D. Kersken, in your issue of May 1, 1924, has been read with much interest over here. Before commenting on his remarkable estimates, I should mention that I have been planting rubber in British Malaya for 26 years and have visited plantations in Java, Ceylon and Burmah.

Mr. Kersken makes it clear that if the Dutch will allow Javanese migration to the Philippines, and if Americans will entrust him with $284,020,760, he will, within twelve years, give some very valuable lessons in economical working to British and Dutch planters—that is if his figures are to be taken seriously.

To begin with, the capital expenditure, including 5 per cent interest from the word "go," is not to exceed $100 an acre for the first four years. Some explanation of this record economy can be discovered by examining the details of the accounts. Apparently all that the coolie is to receive will be found under the heading "Recruiting, etc." The labor force is to be maintained at a cost of $43.80 per capita, per annum, and out of this sum his passage from and back to Java is to be paid. He is to receive annually a cash present of forty cents and also to receive a one-hundredth part of a cow or bull, his share being valued at sixty cents. He will also be privileged to buy rice at a price which will involve the estate in an annual loss of eighty cents. All this comes out of the $43.80.

The salaries to the 800 experienced planters are on a more generous scale, amounting to $18,000 in the fourth year. This is fairly high according to British ideas, but Americans require a greater inducement to desert the comforts of civilization than does the ordinary Briton, with his more primitive tastes.

No provision is made for buildings (only for depreciation) in the first four years as it is probably expected that each man will build his own dwelling at his own expense and in his spare time.

Regarding the Javanese, fifty thousand of these self-housing, unpaid, super-men are to open (all in the first year it would seem) 800,000 acres. That is to say, each man is to drain and fell, clear, plant, and upkeep 16 acres.

The United States Rubber Co. was well occupied for several years in opening 50,000 acres which has been regarded as a great achievement. Now Mr. Kersken intimates that this, as well as the results of British, Dutch and Danish planters who have grown gray in the business, were but the feeble efforts of sluggards.

And then what wonderful trees they will be when they come into yield! After giving the magnificent aggregate of 2,750 pounds of rubber to the acre in the first eight years, i. e., at the rate of 343 pounds per annum *from the date of planting*, they are to yield 700 pounds an acre in the twelfth year, and even that is not to be the limit, because: "With careful tapping and keeping the trees in good condition the yield will increase every year." To achieve this, 20,000 men are to be provided, (say, one man to every 40 acres) for "plantation factory, fighting diseases, etc."

We of the old school of planters find that one man is kept fairly busy "fighting" weeds alone on 40 acres of mature rubber, and that is only *one* of the many little jobs that need to be covered by Mr. Kersken's "et cetera."

The usual experience of working Javanese (outside Java) is that they require more careful handling than any other Asiatic labor. Personally, I have found Tamils more economical. The supervision is to be provided from U. S. A. universities. Most of our planters have not had a University education and possibly this explains Mr. Kersken's confident anticipation of spending only half the capital and obtaining about double the average output from these plantations that are to be, as against those that now exist. In the days of fierce tapping I have known yields of 700 to 800 pounds an acre from 7 to 10 years old, but by the time these trees were 12 years old the yield had fallen to half or even less. An average of 300 to 350 pounds per annum from the 6th to 26th year is good.

In conclusion I would submit one point for consideration of any who might be inclined to subscribe to Mr. Kersken's scheme. The existing area under rubber is not less than 4,000,000 acres and within twelve years' time, according to Mr. Kersken's estimate of yield (not mine) the annual supply will be 1,250,000 tons or three times the present consumption. It therefore appears essential either that consumption be trebled, or that a prohibitive duty be levied on British and Dutch rubber if the American-grown rubber is to realize even the modest price of 15 cents a pound, which Mr. Kersken considers will yield 5 per cent to investors. An import duty on crude produce, giving an advantage to European manufacturers, hardly fits in with your tariff policy, does it?

CYRIL BAXENDALE.

London, England.

### Crêpe Sole Propaganda

TO THE EDITOR:

DEAR SIR: Appreciating the tremendous importance which is attached to any subject which THE INDIA RUBBER WORLD criticizes, I must disagree with you on your editorial on "Crêpe Sole Propaganda."

You state first that the price of crêpe soles and heels should be reduced by about one-half. You evidently have not taken into consideration the enormous amount of labor expended in producing soling crêpe, so that the present market price of about 2*s.* per pound is not out of the way.

When you state that some of the crêpe has been vulcanized, I presume that you mean that it has been cold-cured, but this class of crêpe has very little sale over here. Moreover, plantation soling crêpe has no odor of naphtha or anything else excepting the regular odor of raw rubber.

Soling crêpe has come to stay, and has proved itself to be much superior to a leather sole for length of wear and service for its particular purpose. Let us hope for 1925 that the plantation companies who have taken up the production of this particular article will give us sufficient quantities of a uniform product which manufacturers can depend upon.

E. E. BUCKLETON.

Liverpool, England.

THE WINCHESTER CO., INC., 47 EAST 42ND STREET, NEW YORK city, stock rubber pipe covers in two sizes, known as the Rohlin's Patent, and manufactured in Germany.

# Handling the Summer Shutdown

## Making the Closing Period Profitable—Renovating Mechanical Equipment—Cleaning and Painting the Factory—Inventory Taking

IT HAS been a time-honored custom among rubber manufacturers to close down their plants for brief periods during the year, generally in the summer season, to allow the workers to obtain a short respite from their labors and to do the repairing and reconditioning of the plants and machinery which could not be accomplished while in operation. These shutdowns also have the advantage of bridging over the change from one season to another, and if radical changes are to be made in the product it enables the manufacturer to prepare for them.

In the rubber footwear branch it has been the practice for years to close during the middle of the summer, about August 1, as the sultry, muggy weather at this period causes peculiar phenomena in the product known as "friction" or "weather" blisters, causing a high percentage of damaged shoes. This is also the transition period when production of the summer lines ceases and the winter numbers are produced in greater volume. Similarly in the tire industry a slowing up of dealer demand occurs at this period, and mechanical goods manufacturers feel a slacking in orders for such items as hose and belting.

### Short Closing Period Profitable

Although the closing down of a factory even for a short period means a decrease and often a cessation of profits, it can be made the means of more profitable operation on resuming production if properly planned and fully taken advantage of.

The first step in planning for a shutdown is to schedule the closing by departments so that each division stops operations in the proper rotation, thus avoiding excessive labor charges due to being behind schedule. The second step is to see that as small an amount of "in process" material is left on hand as possible. Uncured gum stocks, especially high grade stocks which contain powerful accelerators, become hard and semi-cured if left over a long period. Coated and frictioned fabrics, even when thoroughly covered up and kept in liners, lose their tack and adhesiveness. Cut parts also deteriorate in the same manner. It is also much easier to accomplish repairs, renovating and altering of layout when raw materials are out of the way, and the task of taking inventory is much easier.

### Renovating Factory Equipment

The mechanical department usually works right through the shutdown period. The mills, calenders, and tubers should be thoroughly gone over to see that the gears are tight, the shafting lined up, pipe connections tight, floor bolts firm, etc. Motors should be blown out and cleaned, and the wiring and connections inspected. Calender rolls should be reground to take out rough spots and to insure the proper crown for the class of work being done. Embossing rolls are similarly taken to the machine shop and gone over for defects. Hydraulic presses and vulcanizers are cleaned, "reasbestosed," their pipe connections tightened up, and put in first class shape. All machinery should be thoroughly cleaned and, after grease, oil, and dirt are scraped off, given a coat of lacquer. The force of carpenters engages in such work as repairing benches, frames, and floors, replacing broken lights of glass, and miscellaneous painting. All windows should be washed inside and out.

Cleaning up and painting are often done by outside concerns who make a specialty of this class of work. Painting the walls with mill white and gray can be done effectively and quickly by using a paint gun. Safety work and elimination of health hazards may be done effectively during shutdowns. Guards on all machines need to be repaired and gone over and new ones installed. Blower equipment for the removal of dust hazards in compound rooms where there is danger of lead poisoning should be cleaned out and put in first class shape. Defects in the plant lighting system, which are always impediments to production and efficiency, should be remedied.

There is always a certain amount of installation of new machinery and changing of plant layout during shutdowns which is usually undertaken by the mechanical force after the repair and renovating work is done.

### Stock Taking for Inventory

The problem of what to do with the salaried personnel during a shutdown is handled in different ways by factory managers. Some believe that it is better for every member of the organization to take a vacation at the same time so that the work will not be handicapped and place too great a strain on the other foremen if they should take their vacations while the plant is running. On the other hand, their presence during the shutdown period offers a great help in accomplishing certain tasks which could not be done at any other time.

Taking inventory is a job which can be accomplished by the foremen to good advantage. They are more familiar with the stocks than anyone else and take a personal interest in the inventory of their own departments. This job occupies only a day or so, however, and can be well supplemented by an appraisal of miscellaneous equipment aside from machinery. This is invaluable, as most factories do not keep accurate records of depreciation on such items as liners, mandrels, dies, and small tools.

Daily meetings of foremen conducted by the plant manager during the shutdown are advantageous in solving many major and minor problems which never have time enough devoted to them during the stress of production. Frequent consultations and discussions on matters of layout and methods of moving and handling materials when held in the plant departments themselves are of great advantage in that they are held on the ground and without interruption.

Indexing and cataloging of the location of small equipment such as dies and molds are excellent jobs for shutdown periods. Every rubber plant is constantly adding to and discarding dies and molds, with the result that the records showing where this equipment is located are often out-of-date and inaccurate. This defect is frequently brought to light during the stress of a production period when a foreman gets through on short notice, and his successor find it especially difficult owing to the lack of system in arrangement of equipment. This work is generally a long-time job and takes the constant application and thoroughness which can only be effectively employed when the plant is not in operation.

The salvage division usually has a busy time during a slack period, as obsolete materials, machinery, and equipment are turned up at this time during the general cleaning up. The raw material stores should be carefully gone over at inventory and all slow-moving and non-usable materials turned over for salvage or sold.

Thus it can be seen that a well-planned shutdown, while admittedly an undesirable condition except for a few weeks in the summer months, can be made a source of great benefit to any factory.

# What the Rubber Chemists Are Doing

## Thermatomic Carbon

By A. A. Somerville and E. B. Spear

THE USE of carbon, in the form of gas black, for reinforcing the tensile strength and resistance to abrasive wear of pneumatic tire treads and solid tires has become so general that in the United States alone 60,000,000 pounds are being used annually in rubber goods production. Briefly, this form of carbon is manufactured by the partial combustion of natural gas. A smoky flame of burning gas is allowed to impinge upon a relatively cold metallic surface which is slowly moved away from the flame and the black deposit scraped off. The soot thus obtained is sifted, bagged, and shipped to the rubber factories. This process gives a product excellent for many purposes, such as tire treads. The maximum yield which has been obtained suitable for use in rubber goods is about 5 per cent of the total amount of carbon in the original gas, or 1½ pounds to 1,000 cubic feet of gas.

### Thermatomic Process

About two years ago a fundamentally different process was put into commercial production, differing from those hitherto used, in that the gas is not burned but rather is decomposed by heat. In technical terms the natural gas, which consists principally of methane, is "cracked" into carbon and hydrogen by passing the gas over preheated brick checker work in large vertical furnaces. The carbon thus obtained is filtered out of the residual gases, screened, and bagged in the usual manner. This is known as the Thermatomic process and is very economical, yielding approximately 30 per cent of the available carbon, in the gas, or 10 pounds instead of 1½ pounds by the partial combustion process.

### Properties

Thermatomic carbon has a dark gray color, an apparent specific gravity 2½ times that of first-class carbon black and does not dust into the air nearly so freely. The reason for this difference is the fact that the particles of thermatomic carbon are smoothly spherical like a marble rather than prickly like a burr.

### Particle Size

When thermatomic carbon is incorporated into rubber or oil vehicles the specific gravity of the resulting mix is identical with that of ordinary carbon black. When completely distributed in a suitable medium, such as water with a protective colloid, it has an average particle size of 0.1 to 0.2 microns. In other words, it is one of the most finely divided compounding ingredients on the market.

### Analysis

Analysis shows that it contains about 99 per cent pure carbon, 0.1 to 0.2 per cent ash, and 0.7 per cent of matter extractable with benzol. This extractable matter appears to be beneficial rather than detrimental in that it aids in the distribution of the particles in rubber or oil. As would be expected, however, it does interfere with the distribution in an aqueous medium unless special precautions are taken during the incorporation.

### Compounding Characteristics

Thermatomic carbon is physically if not chemically unlike other forms of carbon. Therefore the properties imparted to the rubber mix are quite different. Thermatomic carbon does not stiffen rubber appreciably, nor does it lessen greatly the amount of stretch to which the rubber article may be subjected. In fact it behaves in rubber much more like the highest grade zinc oxide. It increases the resilient energy of the rubber compound to a marked degree, while both accelerated and natural aging tests have proven that it preserves the rubber in large degree as against heat, oxygen, or mechanical action.

### General Properties of Thermatomic Carbon Stocks

#### Rubber Stocks

Thermatomic carbon imparts the same properties to rubber stocks that zinc oxide does except that the former has no activating effect on organic accelerators. In fact the stress strain curves of stocks made with one of these compounding ingredients are almost identical with those of the other. Thermatomic stocks are very lively, have a relatively high stretch and a low permanent set.

#### Aging

Thermatomic stocks withstand heat or sunlight comparably to other carbons, and recent tests in oxygen under pressure were most favorable.

#### Milling, Tubing and Calendering

Thermatomic carbon mills into rubber easily and does not fly around. The raw stocks are soft and calender or tube easily with a very smooth surface.

#### Scorching

Thermatomic stocks show little or no tendency to scorch. For this reason it is possible to compound much more heavily with it. Especially is this an advantage when high powered accelerators are employed in order to obtain a short cure. With thermatomic carbon this problem is much simplified.

#### Reinforcing or Stiffening

The reinforcing power of thermatomic carbon is equivalent to that of zinc oxide at the same volume loading. If very great stiffening is essential, carbon black may be mixed with thermatomic carbon or the volume loading may be increased with the latter to values that are impracticable with carbon black. For example, fifty volumes of thermatomic carbon on the rubber will give a stiff lively stock.

#### Resistance to Abrasion

While the resistance to abrasion of thermatomic stocks is less than those of the best carbon black, at the same volume loading, it is equal to those made either with clay or zinc oxide.

### Special Properties

The rubber compounder will realize from what has been said that thermatomic carbon is an excellent ingredient to incorporate into soft stocks, such as frictions, inner tubes, footwear, etc., where resistance to aging through heat or mechanical action is desired. Moreover, its volume cost at present prices is roughly only one-third that of rubber, when the latter sells at 25 cents a pound.

It is also evident from the resemblance of the action of thermatomic carbon to zinc oxide in rubber that it may be used to advantage in tire tread stocks, together with both clay and carbon black for desired reinforcing effect.

EFFECT IN RUBBER STOCKS OF INCREASING AMOUNTS OF THERMATOMIC CARBON WITH M. R. CURED WITH TUADS ACCELERATOR

| | B | M | T | A-1 | A-2 | A-3 | A-4 | A-5 | A-6 |
|---|---|---|---|---|---|---|---|---|---|
| Pale crêpe | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Zinc oxide | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Sulphur | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Tuads | ½ | ½ | ½ | ½ | ½ | ½ | ½ | ½ | ½ |
| M. R. | .. | 10 | .. | 10 | 10 | 10 | 10 | 10 | 10 |
| Thermatomic carbon | .. | .. | 20 | 5 | 10 | 20 | 35 | 50 | 75 |

| | Cure 15 Min. at 20 Lbs. | | | Cure 30 Min. at 20 Lbs. | | | Cure 45 Min. at 20 Lbs. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Load at 500% Stretch | Tensile at Break | % Elong. at Break | Load at 500% Stretch | Tensile at Break | % Elong. at Break | Load at 500% Stretch | Tensile at Break | % Elong. at Break |
| B ..... | 375 | 3,350 | 850 | 545 | 3,880 | 790 | 580 | 3,850 | 785 |
| M ..... | 460 | 3,450 | 800 | 685 | 3,780 | 765 | 660 | 3,900 | 725 |
| T .....1,110 | | 4,250 | 735 | 1,330 | 4,400 | 730 | 1,370 | 4,300 | 705 |
| A-1 ..... | 480 | 3,620 | 850 | 680 | 3,800 | 790 | 735 | 4,000 | 785 |
| A-2 ..... | 640 | 3,520 | 780 | 880 | 4,100 | 785 | 1,065 | 4,090 | 760 |
| A-3 ..... | 780 | 3,400 | 785 | 1,020 | 4,025 | 780 | 1,090 | 4,075 | 780 |
| A-4 ..... | 885 | 3,260 | 770 | 1,270 | 3,780 | 755 | 1,100 | 3,770 | 775 |
| A-5 ..... | 915 | 2,500 | 750 | 1,300 | 3,190 | 755 | 1,450 | 3,260 | 720 |
| A-6 .....1,235 | | 2,240 | 680 | 1,585 | 2,875 | 700 | 1,710 | 2,780 | 680 |

The data tabulated above shows the effect of varying amounts of thermatomic carbon in a range of compounds cured with Tuads in a mold at 20 pounds steam pressure. It will be seen that while moderate amounts of the thermatomic carbon reinforce appreciably, the more important feature is that the stretch or percent elongation at break is only slightly diminished. It is this property of the material, making a soft rubber stock, which makes thermatomic carbon particularly adaptable in soft high grade compounds, such as frictions for all purposes, and inner tubes. It is probably the most economical high grade material for such products, that has ever been offered to the rubber trade.

## The Rôle of Enzymes in the Coagulation of Hevea Latex[1]

By Dr. O. de Vries[2]

In studying the literature on this subject one is often struck by the fact that the experimental data can easily be explained in another way, or that the experimental evidence is far from sufficient to prove the conclusions drawn from it.

In the course of our investigations on the coagulation phenomena in Hevea latex we have tried to elucidate the rôle played by enzymes. Our conclusions are as follows:

### Enzyme in Hevea Latex

The enzyme present in Hevea latex is not able to demulsify this liquid; when demulsification has been brought about by other agencies the enzyme may play a role in bringing about coalescence. The action of the enzyme is rather slow and by no means indispensable; several agencies bring about coalescence in a much quicker way.

Natural or spontaneous coagulation is initiated by bacteria, which by decomposition of serum substances produce the acid necessary to unload the rubber globules. The amount of coagulant produced by bacteria is, however, not sufficient to bring about coalescence, and the enzyme completes the action of the bacteria by forming a coherent clot. Latex heated as described, in which the enzyme and the coagulating bacteria have been killed, undergoes flocculation on infection with bacteria; a porridge is formed, but this porridge does not unite to a clot. On infection with fresh latex (containing the enzyme) the porridge changes into a clot.

Latex collected from the trees in such a way that infection with bacteria is avoided (latex containing the enzyme but no bacteria) does not coagulate or flocculate on keeping. Such latex possesses however, coalescing power on latex already flocculated by a suitable coagulant, and retains this coalescing power, say, for one or two weeks, so that the coalase is not destroyed on keeping such latex.

In ordinary coagulation with a small amount of acetic acid, as generally practiced on estates, the globules are flocculated by the acid but the amount of acid is not sufficient to bring about coalescence, which only slowly follows by the action of the enzyme. Large amounts of acid, however, not only produce flocculation but also coalescence, so that in such a case coagulation is brought about at once by the acid alone. In such a strongly acid medium the coalase has been rendered inactive, as may be proved by the loss of coalescing power on flocculated latex.

### Action of Enzyme Auxiliary

These examples will make it clear that the action of the enzyme is only auxiliary in bringing about the second phase of coagulation, namely, coalescence, in circumstances when the coagulant used to bring about flocculation is not powerful enough to bring about coalescence also. It may be pointed out that, though the enzyme present in Hevea latex is not a coagulating enzyme but only has the power to coalesce, there are other enzymes which are true coagulating enzymes. Papain, for instance, is able to coagulate Hevea latex without the help of a coagulant; it has such a strong acid-producing action on the serum substances that it causes coagulation even in an alkaline latex. Pepsin, on the other hand, although also a protein-decomposing enzyme, in our experiments was found to have no coagulating effect and even did not bring about coalescence, so that, at least in Hevea latex, it is less powerful than coalase.

### Method of Coalescence Important

While the coagulation of Hevea latex may be regarded as a problem which as far as actual estate-practice goes is completely and satisfactorily solved, nothing better than the present methods of coagulation by acetic acid remaining to be desired, the way in which coalescence is brought about may be regarded as of primary importance in some of the most prominent problems of today; for instance, plasticity. There is no doubt that the serum substances play an important role in the hardness of raw rubber; it may already be regarded as proved that all types of rubber containing all the serum substances (sprayed rubber, latex evaporated to dryness in different ways, etc.) are harder, less plastic than ordinary plantation rubber, and consume more energy when being broken down. A rubber which is more plastic and easier to mill but has the same vulcanizing properties as ordinary plantation rubber, is the fervent wish of manufacturers; the problem of the future will be to bring about coalescence in such a way that a plastic rubber with undamaged vulcanizing properties results.

[1] Read at the Rubber Conference, International Rubber Exhibition, Brussels, April 1-16, 1924.

[2] Director of the Central Rubber Station, Buitenzorg, Java.

## Chemical Patents

### The United States

VULCANIZATION ACCELERATOR. A mixture of butyl alcohol and carbon bisulphide is treated with sodium hydroxide and a small quantity of water, chlorinated and distilled. The oily product is of value as an accelerator of vulcanization.—H. S. Adams, assignor to The Naugatuck Chemical Co., Naugatuck, Connecticut. United States patent No. 1,491,021.

PROTECTIVE COATING COMPOSITION. Compositions for use as protective coatings, comprising rubber latex, pigment, a drying oil, and an alkali, are prepared by separately treating the latex and a drying oil coating material capable of coagulating latex, with alkali, and mixing the two liquids.—H. A. Gardner, Washington, D. C. United States patent 1,492,027.

COMPOSITION AND PROCESS. The method of producing a composition comprising mixing rubber or similar material with a vulcanizing agent and the condensation product of an open chain aldehyde with diphenyl guanidine and vulcanizing the mix.—Harlan L. Trumbull, Hudson, and Herbert A. Winkelmann, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,496,792.

VULCANIZATION OF RUBBER-LATEX PAPER. In the manufacture of paper, adding to the beaten pulp in a beating engine, rubber containing latex, balata containing latex or gutta containing latex, to which has previously been added a small quantity of soluble alkaline sulphide, afterwards adding a coagulant to the latex-treated beaten pulp, and delivering the pulp to a paper making

machine, where the excess of moisture is removed, and the paper finally dried by heated rolls which simultaneously vulcanize the rubber in the paper.—Frederick Kaye, Ashton-on-Mersey, England. United States patent No. 1,497,146.

WATERPROOFING COMPOSITION. A mixture for waterproofing cloth is made by boiling 40 to 50 parts of heavy hydrocarbon oil with 5 to 10 parts rubber, adding 5 to 10 parts asphalt and then a filler of 30 to 50 parts.—Nathaniel A. Thompson, Kansas City, Kansas. United States Patent No. 1,500,537.

## The United Kingdom

PRINTING AND ORNAMENTING RUBBER. The surface of crêpe rubber is rendered tacky, and leather dust, fibers, etc., are applied by blowing, brushing, etc., to impart an appearance of suede plush for the manufacture of upholstery, coverings, etc. The material thus treated may be printed upon and have a film of latex applied. The whole is cold cured as by the Peachey process.—Plantation Rubber Mfg. Co., Limited, and M. M. Dessau, 14 Mincing Lane, London. British patent No. 213,835.

COMPOSITION. Raw or depolymerized rubber and liquid or soluble fusible phenol resins are thoroughly mixed on cooled rollers. The mixture is then heated in molds up to 180 degrees C., yielding a product resembling ebonite. Seven to ten per cent of sulphur may be added, or the articles may be vulcanized after molding by treatment with sulphur chloride. Pigments may be incorporated in the mixture.—E. C. R. Marks, 57 Lincoln's Inn Fields, London. British patent No. 214,124.

RUBBER AND CARBON MIXTURE. A colloidal suspension of carbon in a fatty acid soap, saponin, or like dispersing agent is added to rubber latex, which is then coagulated by the addition of alum or dried to produce an intimate mixture of rubber and carbon. The coagulated product is washed and sheeted.—F. S. A. Cohen, 43 Stadhoudersplein, The Hague, Holland. British patent No. 214,210.

RUBBER COMPOSITION. Rubber latex is mixed with agents which absorb the water by chemical or mechanical combination, or both. Suitable agents are cement, gypsum, or clay. Sulphur, preferably colloidal, may be added to the latex to obtain a vulcanizable product.—R. Ditmar, Graz, Austria. British patent No. 214,224.

RUBBER COMPOSITION. A loose fleece, or web of cellulose, such as mercerized cotton, felt, or cellulose wad is soaked in rubber latex. The absorbed water is subsequently expressed and the mass dried. The latex may be concentrated and may have sulphur, fillers such as cement, gypsum, etc. added to it, and the product may be vulcanized.—R. Ditmar, Graz, Austria. British patent No. 214,225.

IMPREGNATING COMPOSITIONS. Rubber in the form of raw or vulcanized latex, colloidal solution in water, or solution in an organic solvent, is incorporated with a colloidally water soluble cellulose compound such as viscose or a cuprammonium solution. Vulcanizing, filling and coloring materials may be added. Fabrics treated with the composition are dried at 70 degrees C., and may be subsequently washed to remove alkali, and vulcanized by hot or cold process.—H. P. Stevens, 15 Borough High street, London, and J. W. W. Dyer, 30 Grange Road, Gravesend, Kent. British patent No. 214,356.

WATERPROOFING RUBBER PAINT. A mixture for waterproofing fabrics comprises rubber boiled in linseed oil until dissolved, together with terebine, liquid dryer, and a pigment such as burnt sienna, Oxford ochre, or vegetable black.—W. W. Lawes, 40 Queen street, Littlehampton, Sussex. British patent No. 214,361.

PRESERVING RUBBER LATEX. Latex to which preservative or anticoagulants may have been added is mixed with about ten per cent of a hydrocarbon, such as turpentine, benzene, naphthalene, kerosene, tar oil or mineral oil. The mixture is either coagulated in the ordinary manner, used directly, or partly evaporated for transport and subsequently diluted for use.—J. Oltmans, 10, Bergweg, Hilversum, Holland. British patent No. 214,477.

CONCENTRATING GUTTA PERCHA LATEX. Gutta percha, balata, and like latices are evaporated to yield pasty or solid water soluble substances. An organic base such as pyridine is preferably used instead of ammonia.—K. D. P., Limited, assignees of M. S. Stutchbury, both of 7 Gracechurch street, London. British patent No. 214,583.

RUBBER THREADS, ETC. Rubber threads, tapes, tubes, etc., are formed by extending latex into a bath of coagulant from submerged nozzles having the cross-section required for the finished article. The coagulant may be a 10 to 25 per cent solution of acetic acid, on the surface of which the extended filaments, etc., float. The coagulum is drawn through the coagulant at a uniform rate to maintain the thickness of the filaments, which are drawn between combs to prevent the formation of kinks. They then pass over a roller into a trough containing cold glycerol, then through a succession of troughs containing heated glycerol to remove the acetic acid and water. From the glycerol troughs the filaments pass through a water bath, thence to a drying conveyor, and from that to troughs containing vulcanizing solutions.

The following are typical examples of such solutions, 5 parts zinc butylxanthogenate, 5 parts dibenzylamine, and 2 parts of sulphur dissolved in 100 parts of benzol containing 20 to 30 per cent of carbon tetrachloride. An alcohol bath hardens the filaments, which are then dried on conveyors to remove alcohol and the solvents for the vulcanizing agents. The filaments then pass through glycerol baths heated to 140 to 150 degrees C. for partial vulcanization, thence through a water bath, and over a drying conveyor to a winding-up roll. If desired, vulcanizing agents may be added to the latex before extrusion. An example of this is as follows: 1 part tetramethylthiuram-disulphide, 2 parts zinc oxide, and 3 parts of sulphur are mixed into a paste with ammonia, which is added to 100 parts of latex containing 55 parts solid content. In this case vulcanization occurs in the first series of heated glycerol baths.—Revere Rubber Co., 355 Valley street, Providence, Rhode Island, assignees of W. A. Gibbons, and E. Hopkinson, 1790 Broadway, New York, N. Y. British patent No. 214,615.

## Germany

HYDROGENATION OF ARTIFICIAL AND NATURAL RUBBERS.—Siemens and Halske A.-G. German patent No. 389,656, May 4, 1921.

## QUINOIDINE

The active principle of quinoidine is quinine alkaloid, which is a natural vitalizer and not only accelerates the combining of sulphur with rubber but also improves the mechanical property of the product. It is non-poisonous and free from all objectionable fumes.

From ¼ to ¾ per cent quinoidine to 3 to 5 per cent of sulphur is generally sufficient to effect the cure of a soft stock. For hard rubber up to 2 per cent quinoidine is used. It does not over cure and for this reason is employed largely in the manufacture of air bags and other rubber appliances which are to be subjected to high temperature in service.

The critical temperature of quinoidine is that of vulcanization. It starts to cure at 240 degrees F. and will not over cure. This insures a uniform and complete cure throughout the rubber mass.

Quinoidine readily melts at the mixing mill temperature so that it is easily and thoroughly mixed with the compound. It can be used in pure gum stocks, and the addition of zinc oxide or other auxiliaries is not necessary to effect a cure. In special instances magnesium oxide up to one per cent is added.

In unvulcanized rubber compounds quinoidine will remain unaltered for months without chemical reaction and in cured stocks will not bloom.

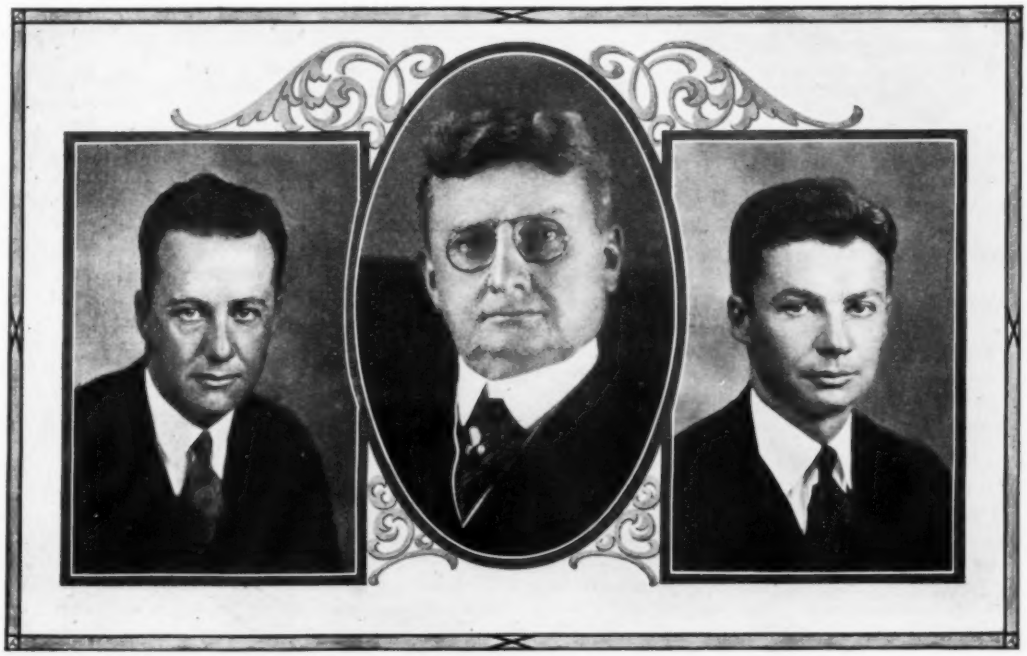
# Three Generations of Rubber Men

## The Murray Family

THE state of New Jersey, and notably the city of Trenton, has long been counted among the important centers of American rubber manufacture. Leaders of the industry there have not only prospered by reason of creative genius and business ability, but have attained prominence in public life and service. Among them three generations of the Murray family are entitled to high rank in the annals of both industrial and civic progress.

### J. Howard Murray

J. Howard Murray, the first of the family to engage in the rubber business, originally came to the notice of the trade as a manufacturer of reclaimed rubber in 1883. The following year his activities at Trenton, New Jersey, were enlarged and the firm name changed to J. Howard Murray & Son, his son C. Edward Murray having completed his education and joined him in the business.



C. E. Murray Jr. C. E. Murray Sr. J. C. Murray

### C. Edward Murray

General C. Edward Murray was born in Lambertville, New Jersey, in 1863, and after finishing school and business joined his father in the rubber reclaiming business at the age of twenty. In 1891 he was in full charge of the business, and when the Rubber Reclaiming Co. was formed was elected secretary, a position which he held for several years.

In 1897 he organized the Crescent Insulated Wire & Cable Co. and the Crescent Belting & Packing Co., of both of which he was treasurer. He bought out the Empire Rubber Manufacturing Co. in 1902 and four years later organized the Empire Tire Co., the two firms being consolidated in 1914 and incorporated as the Empire Rubber & Tire Co., with Mr. Murray as vice-president and treasurer, in 1916 as president and in 1920 as chairman of the board. This firm also took over the business of the Crescent Belting & Packing Co. and has built up a large business in tires, tubes and mechanical goods of all kinds.

Outstanding ability and integrity, magnetic personality, inexhaustible energy, unbounded enthusiasm, and a spirit of good fellowship are some of the qualities which enabled him to build up to great importance the various rubber enterprises under his control and paved the way to his prominence in public life.

Gaining control of the Empire Rubber Manufacturing Co. gave General Murray an opportunity to protect the large stock holdings of General William H. Skirm in that concern and incidentally to further repay him for furnishing much of the capital with which the Murray reclaiming business was started. It was through association with General Skirm, then colonel of the Seventh Regiment of the New Jersey National Guard, that General Murray became prominent in the military establishment of the state. He was for a time on the staff of Colonel Skirm as regimental paymaster with the rank of captain, and later for many years quartermaster general of New Jersey, with the rank of brigadier general.

This brought him conspicuously into public life and politics, and owing to his marked ability he soon became the acknowledged leader of the Republican party in the fourth congressional district of New Jersey, which he has frequently represented as a delegate in Republican national conventions. From 1894 to 1904 he was city clerk of Trenton, and he has long been active in the Trenton Chamber of Commerce.

When the United States went into the war he practically forsook his business interests to serve the government in a military way, and he was one of the leading spirits in the numerous different war fund campaigns conducted in Trenton and a substantial

contributor to all. His other benefactions have been considerable.

In recent years he has devoted himself less to active business, except that he is still president of the Crescent Insulated Wire & Cable Co., and management of the affairs of his companies has devolved upon his two sons, C. Edward Murray, Jr., and J. Cornell Murray. Being an enthusiastic yachtsman he has spent much time in ocean cruising on his yacht "Virginia," his second wedding tour in 1922 having been to the West Indies, Panama, and the Pacific Coast. And wherever he goes he wears with pride the handsome diamond ring presented to him on his fifty-ninth birthday by his employes as a token of their esteem.

### C. Edward Murray, Jr.

At the completion of his school education C. Edward Murray, Jr., the younger son of General Murray, entered the employ of the Empire Rubber Manufacturing Co., and in 1913 was made treasurer of the newly incorporated Empire Rubber & Tire Co. Later he became factory manager, and in 1917 at the time of the reorganization of the business as the Empire Tire & Rubber Corporation and his father's retirement from the presidency, he was elected vice-president and a director, his elder brother, J. Cornell Murray, being treasurer. That year the business of the company was doubled. In 1920 he was vice-president, treasurer, and in charge of the company's affairs.

Following the business slump of 1920 lack of ready cash placed the affairs of the corporation in the hands of receivers, Arthur H. Wood and C. Edward Murray, Jr., who conducted the business successfully until in 1922 it was bought at public sale by a committee of trustees, a plan for the payment of creditors in notes and stock arranged and the Murray Rubber Co. organized to manufacture Murray cord tires and mechanical rubber goods in the Empire plant. Of this company C. Edward Murray is president and his father and brother stockholders.

### J. Cornell Murray

J. Cornell Murray, the elder son of General Murray, has been associated with his father's enterprises since his school days. At various times he was vice-president, secretary, and treasurer of the Empire Rubber & Tire Co., but assisted in the management of the Crescent Insulated Wire & Cable Co. of which he is now treasurer. In 1920 he resigned all official connection with the Empire company in order to devote himself exclusively to the increasing affairs of the Crescent company, but was one of the organizers of the Murray Rubber Co. which his brother heads.

# New Hard Molded Rubber Compositions

THE hard rubber or vulcanite of Charles Goodyear is a black material generally, which in the years of development since its discovery has not been produced in other colors to any appreciable extent. The use of accelerators has assisted in reducing materially the time required to vulcanize it but it still falls short of many practical applications owing to its limitations in color possibilities and quickness of cure.

An interesting development of a new moldable hard rubber product has recently been perfected[1] by a process of chlorination rather than vulcanization by sulphur. The material can be produced with equal facility in any color or intermingling of colors desired and is well adapted for many purposes to which phenolic resin products are now applied.

### Process

The invention relates to processes for halogenating or chlorinating latex and compositions and the articles made from these materials. The term latex relates to the juices of plants producing rubber, balata, and gutta percha. The process eliminates the disadvantages inherent in the preparation of chlorinated rubber employing solutions of rubber in an organic solvent, and provides compositions containing halogenated rubber by a process yielding a product without the use of expensive and inflammable solvents, and with minimum labor and machine operation.

The procedure is as follows, using parts by weight: kieselguhr, 100 parts, is wet with 150 parts of water to which has been added 9 parts of concentrated ammonia, the latter acting as an anti-coagulant of the latex subsequently added. These ingredients are thoroughly agitated in a mixer until the kieselguhr is thoroughly moistened; 100 parts of latex containing about 36 per cent solids are then added and the mass is agitated until smooth and free from granular structure.

### Chlorination

A quantity of the latex and filler mixture prepared as above, the excess water having been removed, is screened to give it a fine granular form and dried at 20 degrees F. The dry material placed in a suitable container is subjected to chlorine gas until the weight has increased to 20 to 24 per cent, based on the original weight employed, or until no more chlorine will be absorbed. The end of the reaction is indicated when greenish fumes persist about the material after standing for some time. The vessel is then opened, aerated thoroughly, and concentrated ammonia is stirred into the powder to neutralize the last traces of acid. The material is preferably washed to remove ammonium chloride. It is then dried ready for molding or pressing.

Dry pigments may be mixed with the powder and ceramic-like slabs be formed in molds under pressure in a hydraulic press.

Porous slabs may be formed as the first operation, chlorination being effected later. This is done by pressing the wet unchlorinated mixture to a desired size and shape and then drying it in a suitable oven at about 200 degrees F. This method of drying provides a product of remarkable porosity and whiteness. After drying, the large slabs may be cut into desired sizes and placed in a suitable receptacle so as to allow circulation between the slabs, and chlorine gas is then introduced at intervals. As rapidly as the gas is absorbed more gas is introduced. The large quantities of hydrochloric acid gas produced are periodically removed by blowing out. Care is exercised not to chlorinate too rapidly, as there is danger of burning the material.

If a waterproof non-absorbent finish is desired the porous slabs may be given two coats of the following mixture:

| | |
|---|---|
| Titanium oxide | 15.0 |
| Raw sienna | 0.2 |
| Chlorinated rubber, carbon tetrachloride solution 20 per cent | 100.0 |
| Solvent naphtha | 25.0 |

A finishing coat is used for a high gloss surface.

### Molded Hard Articles

A product similar in appearance to hard rubber and having many of its properties is prepared as follows:

| | |
|---|---|
| Dry powdered chlorinated latex-filler mixture first mentioned | 90 |
| Carbon black | 15 |
| Solvent benzol, solvent naphtha, etc. | 36 |
| Ground scrap or uncured rubber | 10 |

The addition of ground scrap has the effect of causing the mixture to crumble to a powder and when a homogeneous mixture is obtained the material is ready for molding. This operation may be carried out at 200-240 degrees F. The material is characterized by the rapidity with which it can be molded, a few minutes being ordinarily sufficient. This material closely resembles hard rubber, taking a high polish and being adapted for use where molded articles of vulcanized hard rubber are used, such as in electrical apparatus.

[1] United States patent No. 1,491,265.

# New Machines and Appliances

## Wood Tire Building Core

An improved building core for large section tires is here pictured. It possesses all the advantages of a metal core with only one-third the weight. This feature is a great aid to ease and speed of handling.

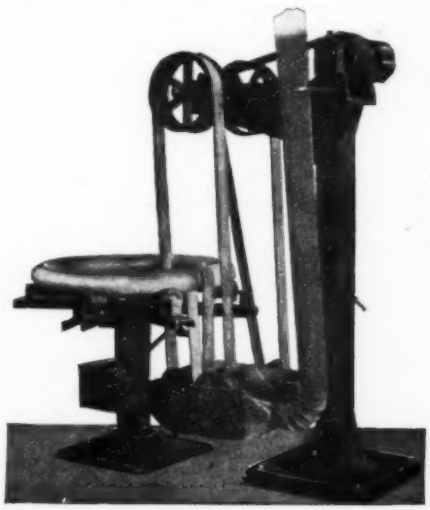
Balloon Tire Core

The interior of the core, including the trimming surface, is made of steel. The steel trim line is a feature which adds greatly to uninterrupted service since it is not affected by the trim knife. This core is made collapsible and is constructed of thoroughly seasoned timber which insures accuracy of size and lightness of weight so desirable and essential for economy of effort and time in building balloon and large size truck tires.

The new core has amply demonstrated these advantages in service and receives the approval of leading tire producers.—The Akron Standard Mold Co., Akron, Ohio.

## Circular Mandrel Polishing Machine

The vast increase of circular mandrel equipment caused by the demand for balloon tires has necessitated the development of the belt polishing machine here pictured, to maintain them in good working condition.



Polisher for Circular Mandrels

Reference to the illustration shows the course of the buffing or polishing belt as it circles around the mandrel revolving on horizontal rolls, guided by two flanged idler pulleys in the dust box from which the buffings are removed by air exhaust.

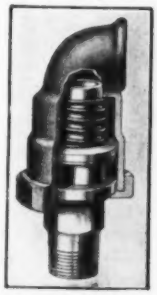
The table supporting the mandrel may be raised or lowered and the idlers slide in or out to give practically any required angle to cover the entire mandrel surface.

By using a very fine crocus belt to take off a certain portion of the ingredients which accumulate on the mandrel, then belt polishing with dry buffing compound, the belting operation does not in any way injure the original zinc deposit but keeps the mandrels in first class condition, maintaining the high luster needed in order that clean-cut tubes may be produced.

This polishing machine is also suitable for conditioning the surface of aluminum as well as sherardized mandrels.—New Haven Sherardizing Co., Hartford, Connecticut.

## Loomis Swing Joint

The swing joint here illustrated, and hereafter known as the Loomis Swing Joint, has successfully demonstrated its exceptional wearing qualities on vulcanizing presses in many plants. This feature depends upon a fibrous packing held under constant pressure by a spring which automatically keeps the joint tight until the packing is worn out. Also, under extreme temperature changes the packing will readily adjust itself to the gland chamber regardless of the expansion of the various parts. Thus a tight joint is maintained under alternate steam and cold water service. The packing space is unusually large, affording extra long life and repacking can be accomplished in a few minutes without disturbing connecting piping. All parts subjected to corrosive action are protected by location in sealed compartments. The turning member is free floating and turns easily without sticking or breakage. The design and assembly is such that there are no relative dislocations due to wear.—Currier-Loomis Co., 39 Cortlandt street, New York, N. Y.

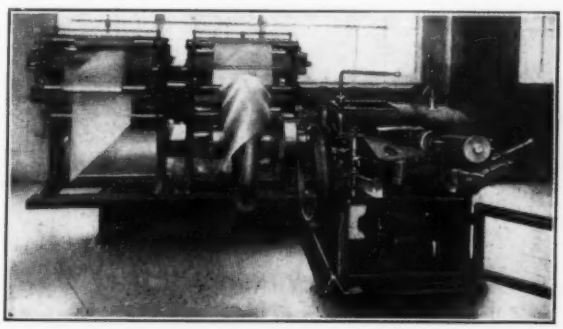


Loomis Swing Joint

## Balloon Tire Building Machine

The essential need of the tire manufacturer is equipment for the quick and economical manufacture of balloon tires. This need is effectively met in the Giant universal building machine here pictured for making balloon and truck tires, inclusive of the largest sizes.

This model like others of the same make has roller bearings throughout, direct motor drive, electric control and patented features that permit the building of single-ply cord tires with exactness of tension and perfect alinement of material relative to the core. The single-ply method of building has undoubted advantages in all types of tires. Plies built on the core singly and given the same percentage of stretch as those banded or fish-tailed, show a large saving in material. All distortion is eliminated and a better tire results.



Hermann Giant Universal Tire Machine

As to economy, by this machine a saving of 30 cents each on four-inch tires is guaranteed and on other sizes in proportion.—The Hermann Tire Building Machine Co., Lancaster, Ohio.

## "Unique" Core Chuck

The latest development in tire chuck equipment is here illustrated. This chuck embodies a standard unit made in only one style and size, which takes any size core with a base diameter from 20 to 26 inches inclusive, or a cross-section up to and including 6.60-inch tire. The all-steel construction makes this chuck practically unbreakable, and light for handling, weighing less than 40 pounds.

De Mattia Core Chuck

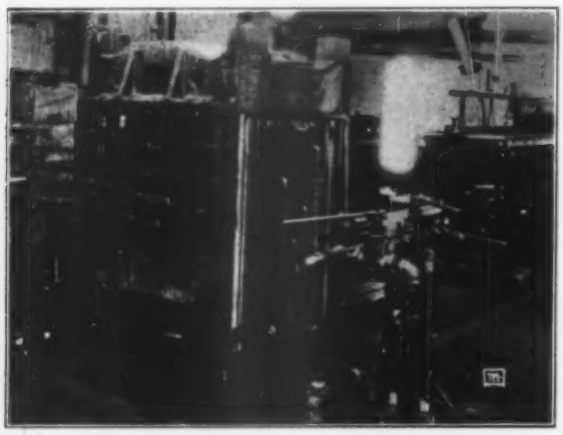
In operation it is necessary to remove only four bolts to change from one size core to another. No part of the chuck projects beyond the front of the core and the distance from center of core to bolting flange is only 2½ inches. A quick lock feature is provided for mounting or dismounting the chuck from the face plate. This arrangement makes it unnecessary for the manufacturers to purchase accessory equipment in order to adapt the chuck to present equipment.

The extreme simplicity of design and operation of the "Unique" chuck with its feature of interchangeable cores brings the cost of its installation extremely low.—De Mattia Bros., Garfield, New Jersey.

## Heel Press of New Design

A hydraulic heel press of new design is here pictured in the rubber heel and sole department of one of the leading American manufacturers of leather shoes.

This press is four-opening, with 32 by 40 inches rolled steel, steam platens. It embodies a new design in ram packing which effectually prevents leakage and at the same time permits easy movement of the ram, and long life to the packing. The slip-joint connections which convey steam from the manifolds are also of improved design, giving a steam-tight joint with minimum friction.



Improved Southwark Heel Press

A two-pressure valve operates the press, low pressure being used to close the molds, followed by high pressure for compression of the stock during cure. Rapid operation of the press and economy of pressure water are thus insured.—Southwark Foundry & Machine Co., Philadelphia, Pennsylvania.

## Flexo Swing Joints

Swinging pipe connections in considerable variety are met with in every rubber plant. The types that do not leak are commendable. The heel press here pictured is represented equipped with Flexo joints, indicated by arrows.

Flexo Joint on Vulcanizing Press

The connection between platens is V-shape and consists of two pieces of pipe with a single bend joint at either end and a reverse bend joint in the center. This arrangement allows free movement of the plates and a full flow of steam at all times with no leaks.—Flexo Supply Co., St. Louis, Missouri.

## Rotary Die Cutter

A simple rotary die-cutting machine has recently been perfected by an inventor in Los Angeles, California. The novel feature of the machine comprises a cylinder upon the surface of which are fastened slightly curved cutting dies. When a sheet of rubber stock is fed into the machine the revolving sets of dies cut the patterns from the rubber in rapid production. The trimmings of unvulcanized waste are recalendered for further cutting.

## Correction

The automatic balloon tire chuck described and illustrated in our July issue was inadvertently called the Bridgewater chuck. It should have been called the India Automatic Building Chuck, patented by The India Machine & Rubber Mold Co., Akron, Ohio. The Bridgewater Machine Co. has been licensed to make the India chuck.

# Machinery Patents

## The United States

(1,497,112). CONTINUOUS VULCANIZER FOR SHEET GOODS. Continuous vulcanization of rubberized fabrics, etc., is accomplished by passing the material around a slowly rotating drum of large diameter, heated internally to the required temperature, and simultaneously subjecting it to intermittent and rapidly recurring pressure against the heated drum during the time of vulcanization. The intermittent pressure is imparted by pressure rollers, which may be heated or not, mounted in the face of the drum and mechanically oscillated at a higher speed than that of the rotated drum, keeping the rollers in motion over the outer surface of the material during its passage.—P. M. Matthew, Edinburgh, Scotland. United States patent No. 1,497,112.

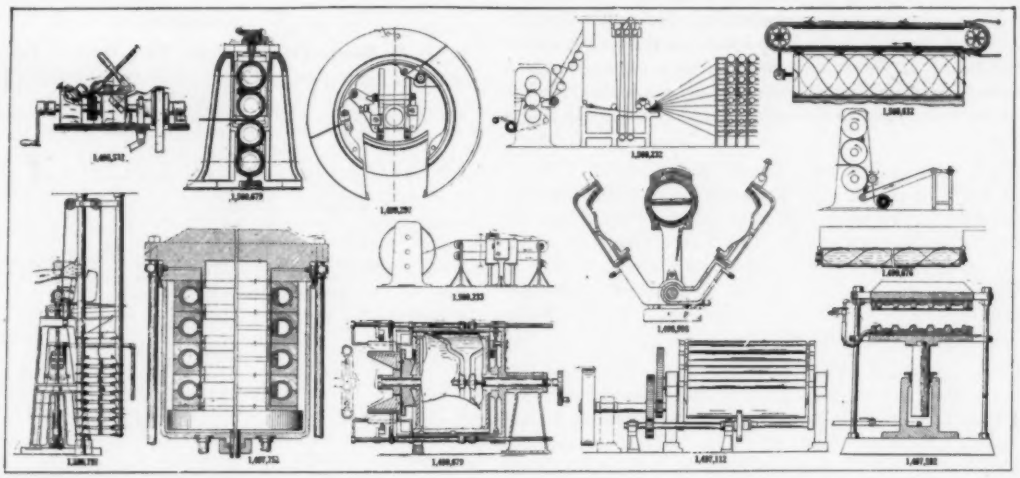
(1,497,592). MOLD FOR HOLLOW ARTICLES. The features of this mold include provision of a channel entirely surrounding the cavity in the mold plate for pneumatically holding the stock close to the mold around the cavity, allowing application of pneumatic pressure on the stock outside the mold and forcing the stock into the cavity without distortion or wrinkling of it at the edges of the cavity. The means for causing a relative vacuum beneath the stock within the cavities may be connected to the same source as the pneumatic clamping means. The mold cavities are arranged with a central protuberance. The surface area of the cavity is thus made equal to the area of the finished distended article, with the result that when the article is forced completely to its seat, it is of the same thickness throughout and of proper size to become a sphere without perceptible stretching.—Fred T. Roberts, Upper Montclair, New Jersey, assignor to Paramount Rubber Consolidated, Inc., Philadelphia, Pennsylvania. United States patent No. 1,497,592.

(1,497,752). TIRE VULCANIZER. An improved construction for carrying on the so-called "manifold process" of curing tires, which consists in forming ducts in the several sections of each mold and branch passages communicating with each tire-receiving cavity, and in positioning a series of molds between clamping members or press platens with seals between the molds and sections so as to constitute the ducts when registered with a header through which pressure may be applied to the inner walls of the tire.—Ernest Hopkinson, New York, N. Y. United States patent No. 1,497,752.

(1,498,532). TIRE BEAD ROLLER. A shaft operated by a hand-crank ratchet carries a grooved roller over which an endless wire bead core is run and caused to flatten out as it passes a pair of spring pressure rollers. The latter fold a rubberized fabric covering strip about the bead ring applying longitudinally progressing rolling pressure, giving the covered ring a triangular section.—Robert R. Ambler, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,498,532.

(1,498,998). TIRE REPAIRING VULCANIZER. A hollow arc core tire section divided into upper and lower compartments is mounted on a stationary support or base. The latter has a steam dome with inlet and outlet. Hollow arms hinged to the base carry steam cored half mold sections that can be folded upward and enclose a section of a tire resting on the central arc section. Circulation of steam in the central and side sections of the closed mold effects the tire repair cure.—Frank J. Brindlinger, assignor of one third to Charles E. Miller and one third to Oliver G. Ziegler, all of Canton, Ohio. United States patent No. 1,498,998.

(1,499,297). COLLAPSIBLE CORE FOR PNEUMATIC TIRES. The apparatus comprises a core of four segmental sections corresponding to the internal cross-section of a tire. The joints between sections are formed on tangential lines. The joints of one section converge from the inner to the outer peripheries so that the section may be moved radially inward and outward. Each section adjacent to the radially movable one is hinged to the fourth section for swinging inward or outward, constituting the collapsible feature allowing easy removal of a tire from the core.—Peter De Mattia, Clifton, New Jersey, assignor to De Mattia Bros., Garfield, New Jersey. United States patent No. 1,499,297.



(1,499,676). BIAS CUTTING MACHINE. In conjunction with the bottom roll of a rubber calender for coating fabric a hollow roll is run, attached upon its surface is a system of spirally arranged wires which can be heated by an electric current. When operated against a sheet of rubberized fabric these hot wires sever the fabric in bias lines and the cut strips are received from the calender roll upon a conveyor and rolled up at a convenient distance with an intervening lining.—Melvon A. Marquette, assignor to The Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,499,676.

(1,499,679). MACHINE FOR APPLYING ENDLESS BANDS TO RING CORES. A band of elastic tire building material placed on the drum of the machine is set in rotation, causing a series of expander fingers to move radially outward so that the band is expanded to a circumference equal to that of the core. The expanded band is automatically transferred to a series of carrier fingers which transfer it to the core.—Thomas Midgley, Hampden, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,499,679.

(1,500,232). CORD FABRIC MAKING MACHINE. Spooled cords supported in a creel are drawn under individual brake control through a guide which arranges them upon a roll in parallel relation. This roll is one of three, the middle one of which exerts a yielding pressure on the cords so that from this point to the calender the series of cords act as a unit under equalized tension. Passing around a series of equalizing rolls the sheet of cords traverses a series of equalizing rolls the last of which directs it to the spacing devices from which it passes through the calender for coating and subsequent winding up with a non-adhesive interlining.—Martin Castricum, Springfield, assignor to the Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,500,232.

The art of manufacturing weftless cord fabric is covered by United States patent No. 1,500,234, granted to the same inventor and assignee.

(1,500,233). WEIGHING MOVING MATERIAL. The weight of a given area, such as a square yard, of a continuously moving material. A unit width is used to indicate the width of fabric that must rest upon the weighing apparatus to give the scale reading for the chosen unit of area. Coated material from a calender is passed over two spaced idler rolls, midway between which it is supported on a scale roll. For increased accuracy in weighing, the material is made to reverse its passage over a second weighing roll. As thus arranged variations of weight of the total width of the material are indicated. The influence of variations in this width is eliminated by adjustably supporting edge portions of the material clear of the scale rolls, thus indicating the weight of the constant width of the intervening material as it passes the scale roll.—Martin Castricum, Springfield, assignor to the Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,500,233.

(1,500,632). APPARATUS FOR CUTTING BIAS STRIPS. Rubberized sheet fabric is passed over a spirally tracked roll, through which tracks the cutting knives, set in blocks, are guided, severing the passing fabric into bias strips. Travel of the knife blocks is secured by an endless belt which returns them after each cut to the starting point for another.—Melvon A. Marquette, assignor to the Fisk Rubber Co., both of Chicopee Falls, Massachusetts. United States patent No. 1,500,632.

(1,500,679). FOUR-ROLL CALENDER. Important features of this invention are, the rolls are capable of ready adjustment with relation to their respective bights. The power multiplying devices may be operated in pairs to move one or two rolls at one time for the individual adjustment between the working forces of adjacent rolls. All the adjustments can be made as the machine operates and be immediately checked by the product.—Thomas Midgley, Hampden, assignor to the Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States patent No. 1,500,679.

(1,500,797). HOSE WRAPPING MACHINE. For better support against bursting pressure in service, wrapped fabric hose is made with plies under increasing tension. This result is obtained by passing the flat ply stock under a hand level presser roll, and over a tension roll to the hose mandrel. Attached to one end of the tension roller is a windlass spool with cable passing upward over guide pulleys above the machine and attached to the top of a stack of weights linked together. The successive addition of these weights by the cable applies increasing tension to the hose plies through the tension roll.—Charles C. Cadden, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y. United States patent No. 1,500,797.

## Other Machinery Patents

### The United States

1,498,222 Method of heating vulcanizers electrically. H. A. Woofter, Swampscott, assignor to Thomson Electric Welding Co., Lynn, both in Massachusetts.

1,498,299 Machine for placing tires upon wheel rims. Grant W. Rollins, assignor to The Willys-Overland Co., both of Toledo, Ohio.

1,498,935 Tire treating apparatus. Samuel M. Shull, Lewistown, Montana.

1,499,793 Mold for the manufacture of resilient tires. Eli J. Taylor, Toronto, Canada.

1,500,885 Electric Steam Vulcanizer. Gust. A. Nelson, Sedro Woolley, Washington.

### The Dominion of Canada

241,063 Fabric cutting machine. The Ajax Rubber Co., Inc., New York, N. Y., assignee of E. A. Reid, Morrisville, Pennsylvania, and J. Diehl, Trenton, New Jersey, all in U. S. A.

241,081 Machine for making tire covers. The Dunlop Rubber Co., Ltd., Regent's Park, London, assignee of Colin Macbeth, Birmingham, Warwick, both in England.

241,443 Apparatus for concentrating latex. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of John McGavack, Elmhurst, New York, N. Y., U. S. A.

### The United Kingdom

214,590 Machine for impregnating cords with rubber. Societe anonyme des Etablissements A. Olier, Usines St.-Rémy, Clermont-Ferrand, Puy-de-Dôme, France.

214,704 Tire building apparatus. P. S. Walton, 294 Slade Road, Erdington, Birmingham.

215,138 Continuous rubber masticator and cooler. Dunlop Rubber Co., Ltd., Regent's Park, London, and H. C. Young and C. Macbeth, Fort Dunlop, Erdington, Birmingham.

215,315 Apparatus for drying comminuted rubber latex. General Rubber Co., 1790 Broadway, assignee of J. G. Coffin, both of New York, N. Y., U. S. A.

### Germany

#### Design Patents Issued, With Dates of Issue

872,086 (April 8, 1924). Hand vulcanizing apparatus. Fleming & Cie, G. m. b. H., Charlottenburg.

872,279 (April 11, 1924). Apparatus for roughening rubber and leather soles. Josef Th. Schönig, Wolfgangstrasse 78, Frankfurt-am-Main.

872,405 (June 1, 1923). Vulcanizing apparatus. The Dunlop Rubber Co., Limited, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Kochnhorn and E. Noll, Berlin, S. W. 11.

872,688 (April 16, 1924). Press mold for imitation horn combs. Gebr. Hoyer, Naumburg, a. d. Saale.

873,578 (April 28, 1924). Apparatus for pressing together beads in automobile tires during vulcanization. Max Kath, Advokatenweg 15a, Halle a. d. S.

875,189 (May 13, 1924). Repair vulcanizer. Firma Carl Kittner, Dresden.

## Process Patent

### The United States

1,497,146 Vulcanization of rubber latex paper. The rubber latex paper becomes gradually vulcanized during manufacture and storage, the strength and other physical properties increasing up to a certain limit according to varying internal conditions. There are added to the fresh or ammonia preserved latex small quantities of soluble alkaline sulphides, the amount being regulated by the rubber content of the latex and the calculated amount of sulphur required to bring about the desired vulcanization. The treated latex is diluted and added to the beaten pulp. Afterwards suitable quantities of acids or of dissociable salts are added to neutralize the alkalinity of the latex, to throw out the rubber upon the beaten fiber, china clay, etc., and decompose the alkaline sulphides to give in close association with the coagulated rubber the required quantities of colloidal sulphur. Vulcanization is wholly or partially effected as the web containing rubber and colloidal sulphur is passed over the heated rollers. Completeness of vulcanization can be obtained by the addition of water soluble accelerators which will adhere to or may be precipitated on the beaten fiber and the rubber associated fiber.—Frederick Kaye, Ashton-on-Mersey, England. United States patent No. 1,497,146.

1,498,017 Method of manufacturing a self-healing tire inlay composition. C. R. Crombie and J. B. Smith, assignors to J. P. Cochrane & Co., Ltd., all of Edinburgh, Scotland.

1,498,215 Method of inserting bristles in rubber pads. M. Vidaver, New York, N. Y.

1,498,864 Method of manufacturing inner tubes. J. E. Cady, assignor to G. & J. Tire Co., both of Indianapolis, Indiana.

1,499,752 Method of splicing pneumatic tubes. W. F. Russell and M. K. Stevens, assignors to The Norwalk Tire & Rubber Co., all of Norwalk, Connecticut.

1,500,097 Process of making an impervious seamed article. C. D. Abraham, Wilmington, Delaware; C. H. Ross, administrator of Abraham, deceased.

1,500,621 Method of preparing rubber goods for vulcanization. J. Hubbard, Seven Kings, England, assignor of one-half to A. P. Crouch, London, England.

1,500,700 Method of Vulcanizing. E. Blaker, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,500,833 Method of ornamenting or coating, using colored rubber cement. F. J. MacDonald, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

### The Dominion of Canada

241,087 Method of assembling an expanded hose and fitting. The Hydraulic Brake Co., Los Angeles, California, assignee of Malcolm Loughed, Detroit, Michigan, both in U. S. A.

241,444 Process of concentrating latex. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of W. A. Gibbons, Little Neck, Long Island, and M. G. Shepard, New York City, both of New York, U. S. A.

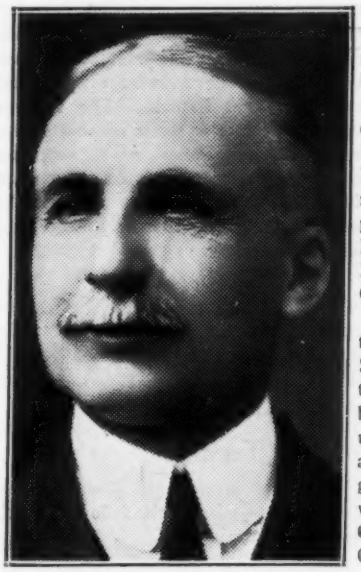
### The United Kingdom

214,044 Method of connecting uppers to insoles and soles. E. F. Kempton, 332 St. Saviour's Road, East, Leicester.

# The Obituary Record

## President of the Canadian Dunlop Company

WARREN Y. SOPER, president of the Dunlop Tire & Rubber Goods Co., Limited, Toronto, Ontario, and one of the foremost industrial and financial magnates of Canada, died at Lornado, Rockcliffe Park, Ottawa, on May 13, in his 71st year.



Warren Y. Soper

Mr. Soper was born in Oldtown, Maine, in 1854, but was brought by his parents to Ottawa, Ontario, two years later, where he has been a resident practically ever since. He was educated at the Webster Institute and there met his future business partner, Thomas Ahearn. In 1881 he married Annie Newsom, of Franktown, Ontario.

Leaving school at about the same time, both young Soper and Ahearn became telegraph operators. Step by step the former climbed upward to the post of manager of the Dominion Telegraph Co. and for a time was superintendent of the Canada Mutual Telegraph Co. Later he was offered the superintendency of the Canadian Pacific Railway telegraph lines in the Ottawa valley district but refused it to start in the electrical business with Ahearn as a partner. Today the firm of Ahearn & Soper, Limited, electrical engineers and contractors, controls a business that gives employment to some three thousand men.

It was Lord Shaughnessy, then plain T. G. Shaughnessy, general purchasing agent of the Canadian Pacific Railway, who put this struggling but ambitious young electrical firm on its feet by awarding it the contract for the telegraph instrument equipment of this great transcontinental railroad from the Atlantic to the Pacific. Their next great success was the construction of the Ottawa Street Railway and solving the problem of winter operation. The Ottawa Car Manufacturing Co., Limited, with its fine record of ordnance manufacture for the Dominion Government, is an outgrowth of this pioneering venture in electrical transportation in Canada.

Great foresight, business acumen, tenacity of purpose, and remarkable versatility connected Mr. Soper for many years with a large number of Canadian corporations of high standing. He had been for years vice-president of the Ottawa Car Co., vice-president of the Ottawa Street Railway Co., and connected as a director with the Imperial Life Insurance Co., Canadian Westinghouse Co., Frost & Wood Co., Canadian Locomotive Co., Ottawa Light, Heat & Power Co., Ottawa Valley Motor Association, and Central Canada Exhibition Association. He was for many years vice-president of the Ottawa Electric Co., president of the Dunlop Tire & Rubber Goods Co., president of the Ottawa Building Co., vice-president of the Ottawa Traction Co., vice-president of the Ottawa Gas Co., and president of the Gas Accumulator of Canada, Limited.

With all his many business affairs, Mr. Soper had time to cultivate the other sides of life. He wielded a pen with facility and true literary style. His fondness for art, in which he was recognized as a connoisseur, has resulted in a collection in his home of some of the best paintings in Canada, as well as of ancient glass said to be unique in its beauty and rarity. He was also an ardent supporter of horticulture and of good roads construction, an enthusiastic golfer and motorist.

He was a member of the Rideau Club, Royal Ottawa Golf Club, Ottawa Hunt and Motor Club, Country Club, Mount Royal Club, Montreal, and York National, Toronto, also of the Art Advisory Council of Canada.

Mr. Soper is survived by his widow, Mrs. Annie Newsom Soper; three sons, Elbert N. Soper, Walter E. Soper and Harold W. Soper; and his only daughter, Mrs. Alfred C. Bethune. Interment was made in the family vault in Beechwood Cemetery, Ottawa.

A big man in finance and industry, a man of rare culture, and above all a man of unostentatious, big-hearted kindliness, his passing is deeply regretted by a host of friends and business associates in the rubber industry.

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## Vice-President of Fisk Rubber Co.

George A. Ludington, for nearly twenty years associated with the Fisk Rubber Co. in various capacities, died on July 18 at his home, 30 Oxford street, Springfield, Massachusetts. In the interests of his organization he had made several trips to the Far East, and the trying experience of being in Yokohama, Japan, last September at the time of the earthquake hastened, it is believed, his death, as he was then in ill health.

George A. Ludington

Mr. Ludington was born in Chatfield, Minnesota, November 4, 1869, the son of George and Martha Ludington. He early became associated with the rubber industry, learning the fundamentals of the business during ten years spent with the Morgan & Wright Co. of Chicago. He then for three years served as superintendent with the Firestone Tire & Rubber Co., in 1905 becoming connected with the Fisk Rubber Co. The latter organization first appointed him superintendent of its plant at Chicopee Falls, Massachusetts, then factory manager at the same place, while for the last five years Mr. Ludington, as vice-president in charge of purchasing, has made his headquarters at the Fisk executive offices in New York City.

Of attractive personality, Mr. Ludington had made many friends, and in both his social and business relationships he was held in the highest regard. He was a member of the Colony Club, the Springfield Country Club, Pilgrim Society, Mayasset Club, Wykagyl Country Club, Woods Hole Golf Club, New York Athletic Club, and the Lotus Club of New York City.

Besides his wife he is survived by three sisters, Mrs. George M.

Naylor of Larimore, North Dakota, Mrs. J. D. Van Fleet of Minot, North Dakota, and Mrs. Curtis Russell of Igo, California. Burial was in the Springfield Cemetery.

### Superintendent of Continental Rubber Works

John A. Vey, who died in Erie, July 14, was general superintendent of the Continental Rubber Works, Erie, Pennsylvania, and had been associated with that organization since its establishment, in 1903.

John A. Vey

Mr. Vey was born in Brighton, England, in 1853, and came to this country at the age of sixteen, when he shipped as a sailor before the mast and finally became a captain. His first connection with a rubber organization began in 1888, when as a hosemaker he commenced working for Whitehead Brothers, then in Erie. Later he became associated with the Lakeshore Rubber Works, also at Erie, the name of that concern being afterward changed to the Pennsylvania Rubber Co. With the removal of the last-mentioned plant to Jeannette, Pennsylvania, Mr. Vey went with the organization, afterward returning to Erie. Here he has been associated with T. R. Palmer, president of the Continental Rubber Works, for twenty-four years and his ability and conscientious management have been in no small measure responsible for the success of the company.

Mr. Vey's career is a conspicuous example of a man without early advantages, who has reached a position of responsibility and authority by his force of character, natural ability and hard work. He had earned the respect and affection of all those associated with him and his passing is a personal loss to every member of the Continental organization. At his funeral the officers and executives of the Continental company served as honorary pallbearers.

### Chief Engineer of Westinghouse Organization

On July 8, Benjamin G. Lamme, chief engineer of the Westinghouse Electric & Manufacturing Co., died at his home in East Liberty, Pennsylvania, where he had been living with his two sisters.

As an authority on electrical matters Mr. Lamme, who became connected with the Westinghouse organization in 1889, occupied a somewhat similar position to that held at the General Electric Company by Charles P. Steinmetz. The former's most spectacular achievements were the designing of generating equipment for the World's Fair in Chicago in 1892; 5,000 h.p. generators, a world's record at the time, when Niagara Falls was first harnessed for waterpower; generating and motor equipment for the first big railway electrification, that of the New York, New Haven & Hartford Railroad; the present day single-phase alternating current, high voltage railway system, which is responsible for most of the railroad electrifications; the design of the most successful synchronous converter ever used; and the single reduction gear street car motor, which though designed in 1890 is the type still used on street railway systems.

Mr. Lamme was closely associated with George Westinghouse, and greatly extended the use of the alternating current system, which Mr. Westinghouse had already perfected.

The "Automatic Waistline Reducer," which combines a rubber vacuum massage cup with a fabric belt, is being featured by Dr. Thomas Lawton, 120 West 69th street, New York City, whose fat-reducing vacuum cup was illustrated in The India Rubber World, November 1, 1921.

## New Trade Publications

A new 16-page illustrated bulletin entitled "Safety in the Rubber Mill," published by The Cutler-Hammer Manufacturing Co., Milwaukee, describes the C-H magnetic safety clutches and brakes with particular reference to their application in rubber mills where they are used to secure quick stoppage of mixing and cracking rolls, washers and calenders, preventing possible serious accidents to the workers around these machines.

Compounding Chat No. 9. This is the latest number in the series of practical booklets on rubber compounding issued by Binney & Smith Co., 41 East 42nd street, New York, N. Y. The advantages of Micronex in wire insulation and cable covering are illustrated in a brief history of the development of pneumatic tire treads with a number of typical formulæ. The technical excellence of Micronex is exhibited in a series of charts comparing the stress-strain curves of stocks containing Micronex and other pigments. The subjects of softness and accelerators are briefly mentioned and Binney & Smith consulting service facilities for researches are offered to manufacturers for solution of their special problems in rubber compounding.

The house organ entitled "Seiberling News for Seiberling Dealers" and broadsides in color featuring "All-Tread" tires, both standard size and balloon, are being sent out in an advertising campaign planned by The Seiberling Rubber Co., Akron, Ohio.

## Foreign Tariffs

The Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C., has recently issued the following special circulars regarding foreign customs tariffs:

| Circular No. | Country | Articles |
|---|---|---|
| *530 | Chile | Rubber Goods |
| 534 | Palestine | Rubber Goods |
| 535 | Syria | Rubber Goods |
| **541 | Denmark | Rubber Goods |
| ***542 | Brazil | Rubber Goods |

*Canceling Special Circular No. 62.
**Canceling Special Circular No. 201.
***Canceling Special Circular No. 231.

### FOREIGN RUBBER TRADE INFORMATION

A series of special circulars, containing brief items of interest regarding the rubber industry in various foreign countries, is now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. As a rule each of these publications contains a number of items, although some are devoted to a more detailed account of the rubber industry in some one country. Those of the latter class mentioned below are marked with an asterisk.

| Number | Special Circular |
|---|---|
| *521 | "Trade in Water Bottles and Syringes in Spain." |
| *522 | "Market for Canvas Rubber-Soled Footwear in Portugal." |
| *523 | "United States Imports of Rubber Tires and Tubes." |
| *525 | "Conquest of the Norwegian Automobile Tire Market." |
| 526 | "Trade in Water Bottles and Syringes in Canary Islands," etc., etc. |
| *527 | "Tire Prices in Hongkong, China." |
| *528 | "Trade in Water Bottles and Syringes in British and French West Africa." |
| 529 | "Market for Mechanical Rubber Goods in Tunisia," etc., etc. |
| 531 | "Tire Market of Antilla, Cuba," etc., etc. |
| *532 | "Market for Canvas Rubber-Soled Footwear in Netherlands and Yugoslavia." |
| *533 | "Market for Automobile Tires in Danzig." |
| *536 | "Market for Canvas Rubber-Soled Footwear in Japan." |
| *537 | "Retail Tire Prices in India." |
| 539 | "Tire Market of Saltillo, Mexico," etc., etc. |
| *540 | "Market for Canvas Rubber-Soled Footwear in Dutch East Indies." |
| *543 | "Market for Canvas Rubber-Soled Footwear in Egypt." |
| 544 | "Tire Market of Manzanillo, Mexico," etc., etc. |
| 545 | "Trade in Water Bottles and Syringes in Amsterdam, Netherlands," etc., etc. |
| 546 | "Heavy Rubber Footwear Imports into Newfoundland," etc., etc. |
| 547 | "Trade in Water Bottles and Syringes in Punta Arenas, Chile," etc., etc. |
| 549 | "Tire Market of Trinidad and Tobago," etc., etc. |

# The Editor's Book Table

## Book Reviews

"THE HISTORY OF THE PNEUMATIC TYRE." BY J. B. DUNLOP, the inventor. With a foreword by his daughter, Jean McClintock. Published by Alex. Thom & Co., Limited, Crow street, Dublin, Ireland. Cloth, illustrated, 103 pages, 5¾ by 8½ inches.

INTENDED by its author to tell in detail the true history of the invention and development of the pneumatic tire, this little book forms a valuable and interesting contribution to rubber literature. No less absorbing than the story of the basic invention itself is that of the organization under the leadership of Harvey du Cros of the Pneumatic Tyre Co., forerunner of the Dunlop Rubber Co.; Mr. Dunlop's connection with it; his subsequent patents, especially for the detachable tire; his relations with Welch, Mecredy, and other inventors, and his subsequent severance of relations with the company.

One cannot read this book without appreciating more fully the dependence of the inventor upon the manufacturer, nor without a feeling of regret that in this as in many similar cases the inventor reaped so conspicuously little of the immense profits derived from his creative work and persistent promotion efforts.

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"THE PLANTERS' ASSOCIATION OF MALAYA, INC., ANNUAL REport, 1923-24." Published by the Commercial Press, Kuala Lumpur, Malaya. Paper, 194 pages, 5½ by 8 inches.

Some valuable statistics and interesting articles regarding the rubber industry of Malaya are included in this annual report. Some of the headings are: "Rubber"; "Bud Grafting and Seed Selection"; "Pests and Diseases of Hevea"; "Improving or Replanting Old Rubber Areas"; "The Rubber Producers' Association of Malaya"; "Proposed Institute for Rubber Research"; "The Rubber Growers' Association"; and "The Brussels Exhibition." The various appendices represent other important items.

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"WATERPROOFING TEXTILE FABRICS." BY HERBERT P. PEARson, M.S.C. Published by The Chemical Catalog Co., Inc., New York, N. Y. Cloth, 112 pages, 6 by 9 inches, indexed, illustrated.

Quoting the explanatory statement found on the title page, this work "contains the formulæ of the principal processes in use in the United States and many employed in other countries. Written especially for the information of textile manufacturers, dyers and merchants."

Following a brief introduction defining terms waterproof and water resistant, succeeding chapters take up in order Basic Principles; The Value of Water-Resisting Processes on Fabrics; Processes for Heavy Cotton Goods; Processes for Clothing Fabrics; Formulæ for the Farmer; Testing Water Resistance; New Developments; concluding with Bibliography of Processes and Formulæ for Waterproofing Textiles Patented in the United States, Great Britain, France and Germany Since 1900.

The processes considered are confined to the two broad classifications of heavy cottons and clothing. The latter include garments and sporting goods, but not goods made of rubberized fabrics. The subject of applying rubber to fabrics is not generally included in the consideration of waterproofing, although properly rubberized fabrics make the only genuinely waterproof clothing, outside of oil-skins and garments made of oil-coated fabrics.

"Waterproofing Textile Fabrics" is a practical treatise by a recognized authority on a little understood art.

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EXPORTS OF BALATA FROM BRITISH GUIANA DURING THE PERIOD from January 1 to May 15, 1924, are reported as being 450,705 pounds, as compared with 303,790 pounds for the corresponding months of the year preceding. Exports of rubber increased also from 300 pounds for the 1923 period to 366 pounds in 1924.

## Recent Articles Relating to Rubber

**The Coagulation of Hevea Latex.** Mixtures of Hevea latex and water show, on addition of acids, the phenomenon of the irregular series. This paper discussed the nature of latex, the phenomena of coagulation, and the respective effects of hydrochloric, nitric, sulphuric and acetic acids in the first and second liquid ranges of coagulation. Coagulating effects of the four acids are compared and also the influence of the acidity of the latex. Reference is made to the investigations of others pointing to the existence of irregular series with Hevea latex which fit in a satisfactory way and are explained by the system of ranges as they are at present known.—O. de Vries. Reprinted from *Koninklijke Akadamie van Wetenschappen*, Amsterdam, Proceedings Volume XXVI, Nos. 9 and 10, 1923. Graphs and tables.

**Relation of Road Type to Tire Wear.** Report of laboratory test methods, apparatus and results on tire wear in which traction was measured by means of a calibrated torque meter installed in the test car.—W. C. McNown. *Bulletin of the National Research Council*, March, 1924, 43-55. Illustrated.

**Research on Rubber Tires.** Outline of work carried on at the Bureau of Standards, Washington, D. C., with a view to establishing a better basis for tire purchases. A special tire endurance machine is described by which it is possible to determine whether or not there is any weakness in the tire in about 1,000 miles of running. In conjunction with such tests power loss tests of pneumatic tires have been carried on for two years and conclusions drawn as to the effect of the variables named.—W. L. Holt. *Bulletin of the National Research Council*, March, 1924, 58-63.

**Action of Certain Anti-Oxidizers on the Aging.** The addition of pyrogallol to mixtures containing only rubber and sulphur causes considerable retardation of the vulcanization, but enhances the resistance of the vulcanized product to aging. If, however, zinc oxide also is present, the addition of pyrogallol facilitates aging, and retards or accelerates vulcanization according as the proportion of the oxide is low or very high. In presence of organic accelerators, pyrogallol delays vulcanization and renders aging more rapid.—C. Pelizzola, *Giornale di Chimica Industriale ed Applicata*, 1924, 6, 59-60.

**Significance of "Slope" of Rubber.** The "slope" figure for rubber, obtained by dividing the difference between the elongations at loads of 600 g. and 1040 g. respectively per sq. mm. by 2.5 is actually a measure of the energy absorbed on extending the rubber between these two limits. It is probably less characteristic for any rubber than the energy of resilience represented by the area included between the stress-strain curve and the strain axis. —R. W. Lunn. *The India Rubber Journal*, April 19, 1924, 629.

**Size of Particles, with Special Reference to Pigments.** A number of pigments are classified according to the sizes of the particles, bulking values, air voids, and oil absorption, and it is shown that there is no clearly defined relationship between the air voids and the oil absorption of a pigment. The effect of grinding on the density and on the size of particles of pigments is discussed, and it is shown that the changes observed depend solely on the particle size condition of the original material. In the case of various samples of red lead, the proportion of $PbO_2$ and the oil absorption both increase as the average particle size diminishes. The importance of small particle size is emphasized, particularly in the case of rubber pigments and in bases for lake making.—C. A. Klein and J. Parish. *Journal, Oil & Color Chemists Association*, 1924, 7, 82-103.

**Application of Rubber Latex to Paper.** The addition of rubber latex to paper has a very favorable influence on the resistance to folding, the effect increasing steadily with gradual increase of the rubber content of the paper from 4 per cent to 20 per cent. The breaking extension of the paper is increased by the presence of rubber, as also is the resistance to water and to dilute aqueous sodium hydroxide; the strength of the paper, however, is reduced somewhat. Although wet latex-sized paper is much whiter than a comparable paper without rubber, in the dry state it becomes yellowish. The mechanical properties and rubber-content of latex-sized paper undergo no alteration on storage for a month in the dark.—J. Beckering-Vinckers. *Papier-Fabrikant*, 1924, 22, 129-132.

**Rubber Cable Conductors.** Various constructions of rubber insulated cables to resist chemical and mechanical treatment are described.—Otto Bodemann. *Ziemen's Zeitschrift*, 1924, 50-3.

**Rubber Solvents from the Standpoint of Industrial Hygiene.** The chief solvents used in the manufacture of impermeable fabrics, varnishes, artificial pearls, etc., $C_6H_6$, $CS_2$, $Et_2O$, $CHCl_3$, $C_2H_2Cl_4$, all act as narcotics. When absorbed in large doses they cause acute intoxication, acting especially on the nerve centers with a short cerebral excitation followed by narcotic and stupefying effects, and also disturbances in the blood circulation with irritation of the tissues. When absorbed continually in small doses they cause a slow intoxication, revealed by hepatic troubles, principally ictera. The toxicity and preventive measures with the $C_6H_6$ and the chlorinated compounds of $CH_4$ and $C_2H_6$ are described in some detail.—E. Kohn-Abrest. *Chimie et Industrie*, 11, 382-6, 1924.

**Control and Construction of Cord Tires.** Descriptive general article.—*Rubber Age*, London, July, 1924, 248-250.

**The Alkalinity of Calcium Carbonate.** The author points out that calcium carbonate from both natural and artificial sources always shows an alkaline reaction in water. The presence and amount of alkalinity in bi-product whiting from caustic soda manufacture should always be determined before use in rubber compounding.—H. L. Terry. *Rubber Age*, London, July, 1924, 251.

**Aging Tests on Fine Pará and Smoked Sheet.** Under like conditions plantation samples give a greater elongation under a fixed load than Pará samples. In the process of aging, the elongations of the plantation samples tend to approach those for fine Pará. The average figures show that the reduction of the elongation takes place more rapidly with plantation than with fine Pará, so that after 168 hours the elongation of the plantation samples is less than that of the fine Pará, although before aging the reverse was the case. Whereas fine Pará and smoked sheet rubber show differences when vulcanized and aged under the same conditions, these differences are minor. Possibly less than one per cent of finely divided pigment would suffice to adjust the physical properties of the plantation rubber and increase the tension to match that given by fine Pará in the same state of cure.—H. P. Stevens. *Bulletin of the Rubber Growers' Association*, May, 1924, 324-330.

**Rubber Latex Particles.** Outline of microscopical research on rubber latex particles. Hevea latex was proved to contain no spherical particles, but their shapes vary from egg-form to pear-shape. It was proved that the rubber of Hevea latex is in a semi-liquid state and consists of a highly viscous liquid; also that a single particle is surrounded by a protective layer of non-rubber constituents, and that the particle itself consists of two distinctly different kinds of rubber as well, regarding the viscosity as their solubility in benzene.—Ernest A. Hauser. *India Rubber Journal*, July 5, 1924, 19-21.

**Kerbosch Rubber.** Discussion of experiments and chemical and physical tests on kerbosch rubber which is one of the few types of rubber containing all the serum substances.—O. de Vries. *Communications of the Central Rubber Station*, Buitenzorg, Java, in *Archief voor de Rubbercultuur*, No. 4. Also in *The India Rubber Journal*, July 5, 1924, 29-35.

**Plantation Rubber Vulcanized with Organic Accelerators.** Introductory remarks on the use of organic accelerators and report of vulcanization and aging tests on "one of the most active types of accelerator, the zinc salt of a carbon disulphide alkylamine condensation product." The data recorded show that (1) by the use of suitable accelerators results can be obtained in aging tests which surpass any similar results obtained by adding inert ingredients to the rubber or by the use of special varieties, such as sprayed rubber, which contain inert ingredients; (2) variations in the conditions of vulcanization, time, temperature, proportion of sulphur, zinc oxide, etc., having but little effect on the figures, it follows that when comparing different plantation samples for vulcanizing in the presence of active accelerators small variations in vulcanizing conditions will not have an appreciable effect on the result.—H. P. Stevens. *The Bulletin of the Rubber Growers' Association*, June, 1924, 380-385.

## Rubber Trade Inquiries

***The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.***

(445) We are asked where a spiral wrapping machine for garden hose may be obtained.

(446) Subscriber asks for names of manufacturers of molds and equipment for making dipped goods.

(447) Request is made for information as to where the wooden plugs used on forms for dipped goods may be obtained.

(448) We are asked for names of manufacturers of rubber thread machines for warping and skeining.

(449) We are asked for a list of hard rubber turners.

(450) A subscriber requests name of manufacturer of soft rubber drinking cups.

(451) Inquiry comes concerning source of supply of hard rubber 4 inches square for mallets.

(452) We are asked for a list of manufacturers of packings, square, braided, etc.

(453) We are asked for a list of manufacturers of rubber sheetings, tailors' mending tissues, etc.

(454) Information is requested as to where Dr. Criles operating table pad may be obtained.

## Foreign Trade Opportunities

***Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Requests for each address should be on a separate sheet and state number.***

| Number | Country and Commodity | Purchase or Agency |
|---|---|---|
| 10,651 | Netherlands—Rubber sundries and specialties. | Exclusive agency |
| 10,658 | Netherlands—Articles for surgical use..... | Purchase and agency |
| 10,683 | Canada—Rubber shoes ..... | Purchase and agency |
| 10,707 | Germany—Shoes, including football shoes.... | Purchase and agency |
| 10,708 | India—Balloons and tires for carriage wheels. | Purchase and agency |
| 10,722 | Germany—Rubber and asbestos packings.... | Exclusive agency |
| 10,822 | India—Toy balloons ..... | Purchase and agency |
| 10,823 | Austria—Druggists' rubber sundries..... | Purchase and agency |
| 10,824 | Austria—Toy balloons ..... | Purchase and agency |
| 10,825 | Wales—Toy balloons, rubber toys, novelties and sundries ..... | Purchase |
| 10,892 | Mexico—Hard rubber combs and rubber bands | Agency |
| 10,931 | Mexico—Hard rubber combs, women's overshoes, and bicycle tires..... | Purchase and agency |
| 10,932 | Java—Rubber sundries and specialties..... | Purchase |
| 10,933 | Italy—Automobile and truck tires..... | Agency |
| 10,934 | Germany—Garden hose and tubing, rubber sundries and specialties, and bicycle tires.. | Purchase |
| 10,935 | England—Automobile tires ..... | Agency |
| 11,017 | Finland—Automobile tires and tubes..... | Purchase |
| 11,018 | Switzerland—Tennis shoes ..... | Purchase |
| 11,023 | India—Rubber heels and rubber sundries.... | Purchase and agency |

### Trade List Available

| Number | Country and Commodity | |
|---|---|---|
| EUR-12,035-C (Revision) | Sweden—Rubber goods..... | Importers and dealers |

# New Goods and Specialties

## Rubber Brake Pads in a Window Lift

IN THE Rawlings instantaneous window lift, which it is claimed is already standard equipment on high grade European cars, rattles are eliminated by means of rubber brake pads which form a soft cushion for the patent buttress brake which grips or releases the glass when a half turn is given to a convenient knob. The roller is secured by an axle fitting into brackets screwed to the garnish rail, and a channel is attached to the bottom of the glass in the usual way. The window is supported by galvanized cable with a breaking strain of 200 pounds and the necessary tension for balancing or lifting is given by winding a nut downward. Such perfect balance is attained that the driver of the car can raise or lower the window with one hand easily, merely by pushing a button.—Rawlings Co. of America, Ltd., 1819 Broadway, New York, N. Y.

## Rubber Aprons with Art Crystal Designs

Naiad Art Crystal Tea Apron

The rubber apron is becoming a very important item of manufacture on account of the vogue which it is enjoying as an adjunct to the Mah Jong paraphernalia and because women have adopted it for use at the tea table instead of the beruffled nainsook ones which used to be popular. The shapes of the aprons are not altered and the ruffles are still present, but they are rubber ruffles on rubber aprons, the material being almost as soft and fine as the nainsook, and in the softest shades of color, decorated in any way desired. Chinese designs are used for Mah Jong aprons, and for the tea apron one of the newest and daintiest is the Naiad, which comes in six shades—pearl, orange, yellow, blue, green, and red, with contrasting art crystal decoration which is claimed to be of exceptionally lasting character. Each apron is packed in an individual box.—The C. E. Conover Co., 101 Franklin street, New York, N. Y.

## New Eraser in Weldon Roberts Line

"Suede" is the name of a new eraser which, as the name implies, is soft and pliant, but which, it is claimed, will erase ink as well as the most stubborn pencil marks easily and leave a clean, even surface on any kind of paper. It is of convenient shape for general

Weldon Roberts "Suede" Eraser

office work as well as for draftsmen and is supplied to the trade in attractive display boxes of one dozen pieces, six boxes to a carton.—Weldon Roberts Rubber Co., 18-26 Oliver street, Newark, New Jersey.

## Pneumatic Upholstery for Automobiles

A new type of air cushion seat is called Float-on-Air and consists of a tube or tubes arranged as shown in the accompanying illustration and secured so that they lie in folds within an outer cover. At each end the tube is open to the atmosphere, so that bulging and rolling are prevented and a cushioning effect is obtained which prevents rebound and affords protection from road shocks and engine vibration. An introverting valve is fitted to each float-on-air tube and this contains a valve stem so that the cushions may be reinflated by an ordinary motor pump from time to time. To inflate, the valve is drawn out from the section of tube and after inflation it is pushed home again until it is flush with the surface of the tube. The manufacturers state that not only are new cushions of any desired measurements obtainable but old seats of the ordinary type can be converted into the float-on-air type in three days at the factory.—David Moseley & Sons, Ltd., Chapel Field Works, Ardwick, Manchester, England.

The Interior of a Float-on-Air Seat

## All-Rubber Household Aprons

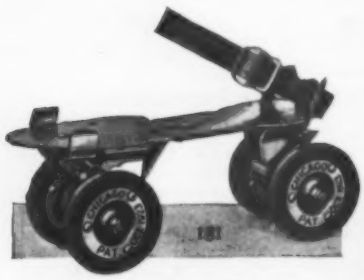
The "Laborlite" household aprons come in black and colors, edged with white or colored border, and provided with straps of the border color which cross in the back from the shoulder tabs to the waistline.—New Haven Rubber Co., New Haven, Connecticut.

## Aviator Suit Interlined with Caoutchouc-Mousse

The words Caoutchouc-Mousse mean "rubber foam." The product is a vulcanized rubber with exceedingly minute cells which retain a certain amount of imprisoned gas in the cells and canals by sealing the edges of the forms together under extreme pressure. The expansion of the gas within dilates the whole mass, which is thus given great resiliency and elasticity. It is always dry and is three times lighter than cork, it is claimed, and has been tested and approved as an interlining for aviator suits, such as the "Salopette" shown in the illustration. This is made of a strong gabardine with heavy silk or satin lining and interlined with caoutchouc-mousse. It is not only a protection from the cold of great altitudes but in case of a fall into the water it will keep the wearer afloat and warm for an indefinite time, and in an upright position. It is also used to make airplanes unsinkable and to absorb the vibration and noise of the motor, besides its more prosaic uses as filling for cushions, pads for operating tables, saddle pads, baseball and other sports' uniforms, etc.—Nils Ihlen, importer, 209-11-117 North Dearborn street, Chicago, Illinois.

"Salopette" Aviator Suit

### Pneumatic Tires for Roller Skates



"Chicago" Roller Skate

While rubber-tired roller skates are not new, the one illustrated is noted because of the specially prepared rubber used in the construction of the tires. The manufacturers claim that under the same conditions their rubber-tired wheel will outwear two and sometimes three steel-tired wheels. The tires are built like automobile tires and the wheels have ball bearings, are noiseless, non-skid, shock absorbing, equipped with oscillating trucks and finished in nickel.—Chicago Roller Skate Co., 4406 Lake street, Chicago, Illinois.

### Another Type of the Popular Rubber Corset

The "Reduc-O-Let"

The principal feature which distinguishes the rubber corset illustrated from the other types on the market is that it has brassiere and hip confiner combined in its makeup and is equipped with shoulder straps as well as garters to hold it snugly in place. It is made of pure Pará rubber and laces are provided to adjust it to the figure. It is worn over an undergarment and is designed to be used instead of the ordinary corset as a reducer.—Biltwell Brassiere Co., 44 East 32nd street, New York, N. Y.

### Lined Bathing Cap

The "Palm Beach" bathing cap has made its appearance in plain, close fitting model suitable for diving and swimming, but novel in that it is lined with a contrasting color. The outside of the cap is light tan; the inside, orange, rolled over the beaded edge which provides a watertight feature. The cap is molded and the two colors are calendered together, the outside having a beautiful velvet-like sheen that is not "bloom."—Maximum Rubber Co., New Haven, Connecticut.

### Pneumatic Accelerator for Ford Cars

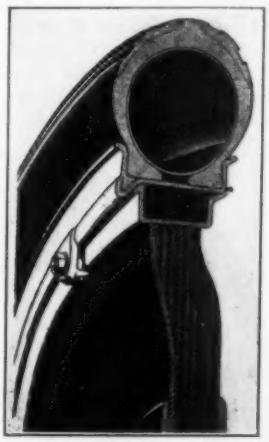
M. P. C. Pneumatic Accelerator

A pneumatic accelerator for Ford cars, employing compressed air instead of the usual rigid metal connection between the foot and the carburetor, comprises a bulb of tough, pliable rubber connected by thick rubber tubing to a rubber diaphragm, the bulb being movable to suit the driver. When the bulb is pressed, the compressed air expands the rubber diaphragm which thus pulls a rod that opens the butterfly valve of the carburetor. Among the advantages claimed for this type of accelerator is the fact that the cushioning properties of the air prevent the gasoline from being fed too rapidly and eliminate the danger of the engine choking and bucking when rough roads cause the foot of the operator to tap the accelerator involuntarily. Another point in its favor is that it can be installed in three minutes and does not necessitate boring holes in the floor or the use of fixtures which would make it difficult to remove the floor boards if desired. —Motor Products Corporation, Detroit, Michigan.

### Cartridge Fountain Pen Has Rubber Barrel

One of the newer fountain pens of the cartridge type is known as the "John Hancock." The barrel is of hard rubber and is made in both the ordinary and the sautoir type. The special feature of the pen is the cartridge containing the ink. Each pen is accompanied by a black-finished brass case containing three cartridges holding sufficient ink to last from three to six months, and the cartridges may be bought separately in sets of three. Leading department stores, drug stores, book stores, and dealers in optical goods are handling the "John Hancock" cartridge pen.—Pollock Pen Co., Newbury and Fairfield streets, Boston, Massachusetts.

### Plywood Wheels for Balloon Tires



Cross-Section of the Mengel Plywood Wheel

The Mengel "Ply-WOOD-Wheel" is built up of layers of hardwood veneer with water-resisting cement, the grain of each ply running at right angles to that of the next to insure the greatest strength to the wheel. The manufacturers claim that this wheel will not "dish" under heavy side impacts but will spring back into shape and run true under all conditions. The wood construction eliminates rumble and the flat back prevents the wheel from catching mud. All sizes are available and for any type of car, but the most up-to-the-minute attraction is the fact that for even the extra large balloons they maintain sufficient clearance. To install one on the old hub of a car the outer hub flange is removed and the wheel slipped on. The 1¾-inch hole can be readily enlarged to fit the hub of any car.—The Mengel Co., Inc., Louisville, Kentucky.

### Swimming Belt of New Design

"Lifegard" Swimming Belt

The chief attraction of the "Lifegard" swimming belt illustrated is the fact that when inflated and donned it has not the bulky appearance of the usual lifebelt. It fastens around the waist with two strap fasteners and in no way interferes with the action of the arms in swimming. When deflated it can be rolled up into a small parcel and carried with the other things in the bathing suit bag. It comes in satin, in several bright colors, including green, red, black and khaki.—Lifegard Corporation, 348 East 146th street, New York, N. Y.

### Crêpe Rubber Tennis Ball

An English patent has been recently granted for a tennis ball formed with a gas or air-filled core, similar to that of the usual tennis ball, and covered with crêpe rubber, a cement solution or other adhesive being used to secure the cover to the core. The crêpe rubber covering is warmed and applied by pressure in a mold. It is claimed that this type of ball is not affected by moisture.—George Alfred March, and Gifford William Richards, Inventors, 32 Charlotte street, Birmingham, England.

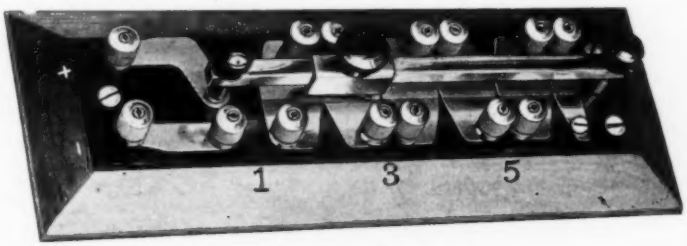
### A Guaranteed Puncture-Proof Pneumatic Tube

The "Iner-Guard" Tube

The illustration shows plainly the construction of the Iner-Guard tube and it is claimed by the manufacturers to be the only pneumatic tube in the world which is guaranteed against blowouts and punctures. Just inside the tire casing is seen the Iner-Guard tube. Then comes a sturdy two-ply fabric, and then the Iner-Guard, around the rubber tube. A rim-protecting fabric flap is also provided. Its warranty insures double the mileage of the ordinary tire.—Iner-Guard Tube & Rubber Co., 113 South Broadway, St. Louis, Missouri.

### Multi-Phone Connecting Block for Radios

A recent addition to the convenience and efficiency of radio outfits is the Globe multi-phone connecting block shown in the illustration. This block allows for connecting up from one to six headsets in series. There is no wiring whatever, a sliding contact being used which passes from plate to plate connecting the headsets or throwing them in one after the other in series. The Globe combination jack binding posts are used for attaching




Globe Multi-Phone Connector

the cord terminals, and when phone tips are used they are simply plugged straight in; where spade tips are used just a little turn of the binding post will make firm contact. The unit is mounted on a mahogany base, the metal parts being mounted on a hard rubber plate. Rubber feet are also provided to protect the polished surfaces of either table or cabinet on which the operator may want to place it.—Globe Phone Manufacturing Co., Reading, Massachusetts.

### "Vulpro"-Proofed Rubber Articles

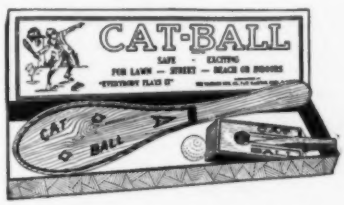
A recent English invention is termed the "Vulpro" process of proofing. It is claimed that Vulpro rubber is not subjected to solvent treatment or corrosive agencies of any kind, that it is full of life, durable, and of feather weight, and that the suppleness and tenacity of the rubber is such that an extremely fine film applied to silk or cotton fabric renders them permanently air and waterproof. It is used in the manufacture of aprons, sanitary articles, tobacco pouches, and in bags and cushions for various uses, since it is entirely odorless. Sponge bags in attractive designs, some with nursery rhymes illustrated on the cover, are also Vulpro lined.—Vultex Products, Limited, General Buildings, Aldwych, London, W. C. 2, England.

### "Canned" Inner Tubes

For marketing their new "Gaspac" tubes the Ajax Rubber Co. has devised a tin container which not only excludes light and air from the tubes but is filled with a harmless non-inflammable, non-explosive gas that preserves the rubber indefinitely and retains for the tube all its original vitality. It is opened by winding a narrow strip from the outside of the container, a key being employed such as is used in the canning industry. The tube itself is fabricated of selected materials and, on account of its packing, is designated as "the tube that never grows old."—Ajax Rubber Co., Inc., 220 W. 57th street, New York, N. Y.

### Cat-Ball

The use of a specially devised trap and a rubber ball instead of the wooden peg has taken the danger out of that favorite "cat" game of the ubiquitous small boy, without in any way robbing the game of its attraction. It is played in exactly the same way except that instead of tapping the small end of a heavy wooden peg and sending the peg speeding through the air, the projecting end of a small trap is struck and a harmless rubber ball bounds up to be batted. The game is attractively boxed and the manufacturers state that it is proving to be an extra fine summer seller.—The Watrous Manufacturing Co., East Hampton, Connecticut.



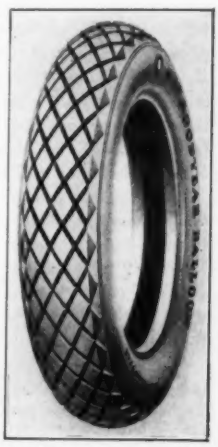

Trap, Ball and Racket for Cat-Ball

### Stenciled Bathing Cap

An American manufacturer has adapted a foreign idea and produced what has the appearance of a stenciled bathing cap. The "Colonial Quality" caps are in different colors of rubber, in plain shapes for diving and swimming, and depend for their decoration upon a conventionalized flower design stenciled or printed on them with what are said to be waterproof colors.—Samstag & Hilder Brothers, 1200 Broadway, New York, N. Y.

### A New Goodyear Balloon Cord

Superior fabric and a new process of preparing the cord material are the features of the new balloon cord, the Goodyear "Supertwist," shown in the illustration. The company states that this type of cord tire will give twice the service now expected of the average cord.—The Goodyear Tire & Rubber Co., Inc., Akron, Ohio.



Goodyear "Supertwist"

### Novel Rubber Bags

Among the imported French novelties are rubber bags for beach use, made of pure rubber in different colors, by the same means as bathing caps, the surplus rubber at the seam being cut off on the inside. The tops are finished with a strip of fabric of contrasting color which provides room for a draw-cord, and the sides are artistically decorated with designs of flowers stenciled on in soft colors and touched up to bring out the high lights. These bags are shown in department stores.

# Laying Rubber Floors

## Rubber Laid on Concrete—On Wood and Compo-Board—Laying Out the Work—Rubber Sheet Flooring—Care of Rubber Floors

By Elmer Swanson

IN INSTALLING rubber on concrete, which is the least expensive method, one of the most important requirements is that the concrete should be free from moisture, oil, paint, lime, or foreign matter. The surface must be smooth and solid, with no crumbling of any sort which would cause the rubber cement to lose its grip on the floor. All joints and crevices must be filled with plaster of Paris or other material which has a strong body. If the floor is damp the rubber cement will not hold on the concrete, but will stick to the rubber, the corners will turn up and blisters appear in the centers of the loose tiles. Dampness in the floor is shown by liquefaction of calcium chloride when scattered upon its surface.

A rubber floor will not stay down on a cement floor laid on the ground, such as theater parquets, basement floors, etc., where there is no air space underneath. The rubber floor seems to draw the moisture from the ground through the cement floor, causing it to loosen. Paint should always be removed from floors with lye or paint remover, using rubber gloves on the hands.

### Rubber Laid on Wood and Compo Board

In laying rubber tile on wood if the floor is smooth a felt paper is first applied and then thin paper about the weight of newspaper. On top of this, unbleached muslin is nailed down with special tacks about three inches apart. The rubber tile is cemented to the cotton cloth, then if the rubber should stretch or the floor shrink, they will move together.

If the wood floor is uneven the joints should be dressed down with a plane or sanding machine. If it is a shiplap underfloor which has been used for concrete forms, most commonly used in new residences, a wood compo board should be laid first (no paper or fiber board), with the grain running opposite to that of the shiplap. The nails should be six inches apart, using big-headed roofing nails.

When compo boards are laid on a worn, uneven floor, cloth and paper must be used. If rubber floor is laid on compo board and it should shrink when no cloth is used, which sometimes happens, the rubber cracks in every seam of the compo board, which necessitates the tearing up of the entire floor.

Should the under-floor dry out in cases where the rubber is placed directly on it, the rubber would also do the same, causing an unsightly appearance. Some concerns cement the felt paper to the floor and then cement the rubber to the felt paper. By doing this they save probably five cents per foot, but this is not a good policy. Should the floor stretch it would tear the upper surface from the bottom surface and the floor would therefore become loose.

It is said that cement which is laid on the felt to hold the rubber down, penetrates to the bottom of the felt. In this case, why use felt at all, for the rubber floor is cemented to the wood anyway. The rubber must have a chance to stretch in case the under-floor should shrink. If not, there will be air pockets and blisters. By using felt paper all tack heads are hidden, otherwise every head shows as a dust spot when the floor gets dusty.

If thin paper is used over the felt, or under the cotton muslin, the cement under the rubber will not adhere to the felt paper. The rubber cement penetrates the cotton muslin and adheres to the thin paper, which gives it a chance to slide, the tacks holding it to the floor. The cotton muslin is stretched as tight as possible and butted together. No overlapping should be used, for it will be noticed from the shine on the surface of the floor. The same applies to rubber cement when it is stringy, lumpy, or has foreign matter in it.

### Laying Out the Work

In laying out the work the most important feature is in the tile being cut perfectly, otherwise the pressure may be unevenly distributed, and very little pressure is needed. For some reason rubber has a tendency to expand after it has been laid in rubber cement.

The most satisfactory way to lay a checkerboard design diagonally, is to figure the number of tile from each side of the room, snap the center lines, and work from the center, always figuring the opposite color of tile from the half tile on the sides. In square checkerboard, always try to get odd tile each way, so that the same color tile will be in each corner. If joints are used they should be thoroughly ironed down with the hammer head. The whole floor should be rolled with a roller weighing at least one hundred pounds to insure its being free from air pockets.

When the tile is laid square, the mottling should run opposite each other, so that the mottling of no two tiles will run along side by side. The same applies to tile laid diagonally, excepting the half tile, which must be right halves on opposite sides, and left halves on the other opposite sides. There should be no cut tile on any side. Full tile should always be used. By this is meant that no corner should be cut other than one-half if used diagonally, except outside corners which require ¾-tile, and side corners which require ¼-tile.

If rubber tile is to be repaired the proper thing is to replace it with a perfect tile. If the mended tile is used there will be a tendency to pull itself to the same position it was in before, necessitating another repair.

### Laying Rubber in Large Sheets

Rubber laid in large rolls if merely put down loose lies evenly but will not prove satisfactory if cemented down. If cut up in small squares from four inches to two feet and laid on concrete it will stay, and the same applies to wood if felt, paper, and cloth are used. Stair treads, which as a rule are one single piece, do not require cloth as a contraction. In such a case the rubber would follow and not be noticed.

### Care of Rubber Floors

A vegetable soap is best suited for rubber floors for it is free from acid and leaves a gloss after it has been used for a time. While common cleaners do clean the floor thoroughly, the acid has a tendency to check the surface, and if such a thing occurs it will be impossible to keep clean after that. Scouring powders also affect the mottling of the tile, causing it to eat away the fiber. There are several good vegetable or oil soaps on the market which come in pails and are very cheap. Care should be taken not to use too much water. Rubber is waterproof, but should the water get under the floor it would have no outlet, causing the cloth to dry rot, and damaging the floor. Ivory soap is good for rubber floors if vegetable or oil soap cannot be had.

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DURING THE CALENDAR YEAR 1923 BRITISH MALAYA'S EXPORTS to the United States of crude rubber reached a value of £21,302,722, those of gutta inferior being estimated at £101,626. Imports during this period from the United States of rubber tires were valued at £43,143.

# News of the American Rubber Trade

## Rubber Industry Outlook

DURING June the rubber industry evidently passed the low of the recent depression and from accumulating indications is sharing the improved activity evident in most industrial lines. The leading rubber companies report improved net profits from their business of the first six months of this year as compared with those for the corresponding period of 1923.

Since the last reduction in tire prices, ranging from 8 to 15 per cent, tire sales have gained in volume. Tire manufacturing schedules have been advanced to normal proportions because of reduced inventories of finished goods in the hands of manufacturers and tire dealers.

A fair margin of profit is still possible at current tire prices by close supervision of the cumulative economies of materials, manufacturing facilities and reductions in sales and administrative expenses. This is particularly true of the smaller tire companies who are making sales as far as possible on a cash basis, virtually after the successful mail order plan of merchandising.

Quickening of business in the mechanical and footwear divisions is also evident, with prospects of orders in good volume for the remainder of the year. Rubber companies are evidently emerging slowly from the recent depression with reinvigorated earning power due to organized economies and reduced inventories. Optimism rules in the rubber industry.

## Financial

### Goodrich Quarterly Statement

The regular quarterly meeting of the Directors of The B. F. Goodrich Co. was held July 23. The directors issued the following statement:

The net earnings of The B. F. Goodrich Co. for the six months ended June 30, 1924, before deducting depreciation and interest on borrowed money amounted to $5,135,000. After deducting interest of $1,324,000 and depreciation of $1,056,000 the net earnings amounted to $2,755,000. The net sales for the same period were approximately $50,100,000.

The regular dividend of $1.75 per share was declared on the preferred stock, payable on October 1, 1924, to stockholders of record September 20, 1924.

### Dividends Declared

| COMPANY | STOCK | RATE | PAYABLE | STOCK OF RECORD |
|---|---|---|---|---|
| Firestone Tire & Rubber Co. | Com. | $1 | July 21 | July 10 |
| Firestone Tire & Rubber Co. | 6% Pfd. | 1½% q. | July 15 | July 1 |
| General Tire & Rubber Co. | Pfd. | 1¾% q. | July 1 | June 20 |
| Goodrich, B. F., Co. | Pfd. | $1.75 q. | Oct. 1 | Sept. 20 |
| Hood Rubber Co. | Pfd. | 1¾% q. | Aug. 1 | July 19 |
| United States Rubber Co. | Pfd. | $2 q. | July 21 | July 15 |

### New York Stock Exchange Quotations

July 23, 1924

| | High | Low | Last |
|---|---|---|---|
| Ajax Rubber, com. | 9⅛ | 8⅛ | 8⅞ |
| Fisk Rubber, com. | 8 | 7⅜ | 7⅞ |
| Fisk Rubber, 1st pfd. | 43¼ | 43¼ | 43¼ |
| Goodrich, B. F., Co., com. | 22⅞ | 22 | 22 |
| Goodrich, B. F., Co., pfd. (7) | 78¼ | 78 | 78 |
| Goodyear Tire & Rubber, pfd. | 54 | 53½ | 53¾ |
| Goodyear Tire & Rubber, pr. pfd. (8) | 95⅜ | 95¼ | 95¼ |
| Kelly-Springfield Tire, com. | 16⅛ | 15⅝ | 15⅝ |
| Kelly-Springfield Tire, 1st pfd. | 47½ | 47½ | 47½ |
| Keystone Tire & Rubber, com. | 2½ | 2⅛ | 2¼ |
| Lee Rubber & Tire, com. | 11⅛ | 11 | 11⅛ |
| United States Rubber, com. | 31½ | 31 | 31 |
| United States Rubber, 1st pfd. (8) | 81½ | 81 | 81 |

### Akron Rubber Stock Quotations

Quotations of July 18 supplied by Otis & Co., Cleveland, Ohio.

| | Last Sale | Bid | Asked |
|---|---|---|---|
| Firestone com. | 66⅛ | 65½ | 66 |
| Firestone 1st pfd. | 96½ | 95½ | 97 |
| Firestone 2nd pfd. | 86 | 85½ | 86½ |
| General com. | 175 | ... | 175 |
| General pfd. | 97½ | ... | 100 |
| Goodrich com. | 24½ | ... | ... |
| Goodrich pfd. | 76 | ... | ... |
| Goodyear com. V. T. C. | 10⅛ | 11 | 11¼ |
| Goodyear pfd. V. T. C. | 47¾ | 52 | 56 |
| Goodyear pr. pfd. V. T. C. | ... | ... | ... |
| Kelly-Springfield com. | 36 | ... | ... |
| Kelly-Springfield pfd. | 118 | ... | ... |
| Kelly-Springfield 2nd pfd. | ... | ... | ... |
| McGraw com. | ⅛ | ... | ... |
| McGraw pfd. | ¼ | ... | ¾ |
| Miller com. | 65 | 65 | 68 |
| Miller pfd. | 95 | 95 | ... |
| Star com. | 9 | ... | ... |
| Star pfd. | 30 | ... | ... |
| Swinehart com. | 16 | ... | ... |
| Victor com. | 1 | ⅞ | 3 |
| Victor pfd. | ... | ... | ... |

### New Incorporations

American Rubber Export Co., The, June 14 (Ohio), $10,000. Walter C. Cassidy, president and treasurer; Oliver C. Moles, vice-president and secretary, both of Akron, Ohio. Principal office, Akron, Ohio. To export manufactured rubber goods and automobile accessories.

Automobile Protective Service Association, July 5 (New Jersey), $25,000. Incorporators: Willard MacGarret, Charlotte I. MacGarret, both of 43 Sayre street, and Richard B. Johnson, 857 Sheridan avenue, all of Elizabeth, New Jersey. Principal office, 80 Broad street, Elizabeth, New Jersey. To deal in automobile accessories.

Bur-Mac Mfg. Co., July 1 (New Jersey), $50,000. Incorporators: George Maier; Harry E. MacPherson; Herbert N. MacPherson; John J. Hart and Richard T. A. Burke, all of Bridgeton, New Jersey. Principal office, Broad and Fayette Sts., Bridgeton, New Jersey. To manufacture, sell and deal in shock absorbers and other accessories.

Dunn-Pen Co., Inc., July 14, (New York), 3,000 shares no par value. John Gerdes, president; James H. Scarr, vice-president; C. B. Bentz, secretary, and Walter S. Rockwell, treasurer. Principal office, 71 Fifth Ave., New York City. To manufacture and sell Dunn pens and Dunn pencils.

Dutchess Insulation Co., Inc., May 6 (New York), $10,000. Avery P. Eckert, president, East Orange, New Jersey; Elliot C. House, vice-president, Pelham Manor, New York; Marie E. Marx, secretary, Bayonne, New Jersey; Harold A. Hatch, treasurer, New York, N. Y. Principal office, 320 Broadway, New York, N. Y. To manufacture and sell varnished insulating fabrics.

Excello Rubber Co., Inc., July 5 (New York), $50,000. Benjamin A. Cohen, C. A. Cohen, and I. E. Nassaw, all of New York., N. Y. To manufacture waterproofed clothing.

Livingston Auto Parts, July 10 (New Jersey), $100,000. Incorporators: Solomon M. Halprin, 133 Somerset street; Edward Horwitz and William Perlmison, both of 48 Livingston street, and all of Newark, New Jersey. Principal office, 164 Market street, Newark, New Jersey. To manufacture and deal in automobile tires, accessories, copper and brass articles, etc.

MacLaughlin-Conway, Inc., May 3 (Massachusetts), $200,000. Charles E. Conway, president; Charles D. MacLaughlin, treasurer; both of Lynn, Massachusetts. Principal office, Lynn, Massachusetts. To manufacture, buy, sell and deal in boots, shoes, leather and rubber goods of all kinds.

Miller-Gross Rubber Co., Inc., May 24 (New York), $10,000. H. T. Miller, president and treasurer; W. A. Gross, vice-president; and B. F. Miller, secretary, all of Troy, New York. To deal in tires, tubes and accessories, with a vulcanizing shop in conjunction.

Provident Sales & Service Co., July 3 (New Jersey), 250 shares without nominal or par value. Incorporators: Frank A. Cabeen, Jr.; Haverford; George C. Meade, Ambler; and I. Raisch, Philadelphia, all of Pennsylvania. Principal office, 2 Annapolis Ave., Atlantic City, New Jersey. To manufacture and deal in automobile accessories.

Queens Tire Store, Inc., June 23 (New York), $10,000. Alva E. Lindahl and Ebba Lindahl, both of Astoria, and W. J. Creamer, Corona, all in New York. To deal in tires and automobile accessories.

Radical Rubber Co., Inc., July 11 (New York), $10,000. S. E. Levene, Far Rockaway; S. M. Newman, Manhattan; and B. Weinberg, Bronx, all in New York, N. Y. To deal in horses' hoof pads, leather goods, etc.

708 Tire & Service Co., May 19 (Arkansas), $20,000. F. M. Roane, president; H. S. Rosenberg, vice-president; T. M. Mourning, secretary and treasurer. Principal office, Pine Bluff, Arkansas. To sell automobile tires, tubes and accessories and truck tires and do vulcanizing.

Storm Spark Plug Corporation of America, May 23 (New Jersey), $125,000. Incorporators: Lynn Vitale; John J. Cletro and Anthony S. Micone, all of Newark, New Jersey. Principal office, 820 Sumner Ave., Newark, New Jersey. To manufacture and deal in automobiles and accessories.

White Lion Rubber Works, June 10 (Texas), $15,000. Dr. Y. F. Hopkins, president; S. G. Gernert, secretary and treasurer; and H. H. Theis, manager, all of Taylor, Texas. Principal office, Taylor, Texas. To manufacture rubber specialties, consisting of automobile tire accessories.

## The Rubber Trade in the East and South

The general scarcity of manufacturing orders noted a month ago has begun to show improvement in common with general revival in industrial lines and summer shutdown will be shorter than anticipated. While the larger tire companies may not be working at full capacity their schedules are increasing and are practically normal for the summer season. Delayed deliveries of automobile topping are being released by order of automobile manufacturers, particularly for the less expensive cars. Meantime topping manufacturers are interested in calender work for corset makers in preparation of pure sheet and double face circular knit jerseys of silk and cotton.

Rubber boot and shoe mills are reopening with fairly liberal orders on goods for winter wear. Conditions are improving as regards the volume of orders from leather shoe manufacturers although prices remain severely competitive. There is a marked tendency to preference of the cured crêpe sole over the uncured as being a more satisfactory sole for wear.

Manufacturers of insulated wire and cables continue production in good volume. In code wire prices have become closely competitive. The dullness of recent months in mechanical rubber goods lines is being displaced by increased activity resulting from the general recovery of all industry after the recent period of depression.

### R. T. Vanderbilt Co. Takes Over Thermatomic Carbon

A combination has been effected whereby the R. T. Vanderbilt Co., New York, N. Y., will take over August 1 the sales of the products manufactured by the Thermatomic Carbon Co. at Sterlington, Louisiana. This arrangement brings together the combined efforts of two well-known rubber experts, Dr. A. A. Somerville, and Dr. E. B. Spear.

Dr. Somerville, formerly with the United States Rubber Co., is vice-president of the R. T. Vanderbilt Co. He is thoroughly versed in the technical problems of American rubber practice and will have charge of sales of "Thermatomic carbon."

Dr. Spear, formerly of the Research Department of Goodyear Tire & Rubber Co., Akron, Ohio, is vice-president of the Thermatomic Carbon Co. and chairman of the Rubber Section of the American Chemical Society. He will devote his time and efforts to the production, research, and development of "Thermatomic carbon."

The Thermatomic company owns plants operating in the Monroe, Louisiana, gas field and controls patents covering a process whereby carbon may be produced at considerably lower cost than is possible by the older methods of burning the gas.

Regarding this compounding ingredient it is essential to note that it is a soft carbon product derived by special process from natural gas without burning. It does not stiffen a rubber mix and can be used to advantage in rich, rubbery stocks such as automobile inner tubes and tire frictions, etc. It is said to produce a soft but tough stock that is not injured nor inclined to generate great heat by continued flexing. Neither does it retard the rate of cure as some reinforcing materials do. Owing to its low volume cost and its unusual qualities when properly compounded, Thermatomic carbon seems destined to meet with extensive use in the rubber manufacturing industry.

The addition of Thermatomic carbon to the already well-known Vanderbilt line of compounding materials insures that it will be handled by technical men and sold at a reasonable price.

### Dunlop Activities

Sir Eric Geddes, chairman of the board of the entire Dunlop organization, recently visited the company's American plant at Buffalo, New York. During his stay the guest of honor attended a dinner where members of the Dunlop sales and building divisions were present, and also attended a conference of the company's divisional sales managers.

According to the visitor the Dunlop organizations in various parts of the world are operating satisfactorily, while the English division is running more than 50 per cent ahead of last year. It is now producing more than 90 per cent of British-manufactured tires sold in England, and 50 per cent of all tires sold there. The number of automobiles used in England is steadily increasing, while 20 per cent more tires are being used this year than last.

The progress being made by the Buffalo branch of the organization appeared also to greatly please Sir Eric, who predicted that the enterprise would prove a great success. A recent development has been the exportation to Mexico, Central and South America, Sweden, and East Africa of casings produced in the Buffalo factory.

LEFT INSERT—E. B. SPEAR. RIGHT INSERT—A. A. SOMERVILLE

**Factory of the Thermatomic Carbon Co., Sterlington, Louisiana**

### Eastern and Southern Notes

On June 1 the New York City offices of The Armstrong Rubber Co., Inc., were removed from 361 Seventh avenue to 1 Madison

avenue. Executives of the organization state that Fred Machlin is now sales manager, succeeding Ira A. Worthington.

Lower than standard rates for the conveying of rubber goods are being offered by the Williams Steamship Co., Inc., International Building, Water, Moore and Front streets, New York, N. Y. These lower terms are possible due to infrequent sailings and longer time in transit. The Williams Line has special compartments on all steamers for the carriage of rubber goods.

E. S. Lenhart is now associated with J. S. Rodenbough & Co., crude rubber brokers, with offices at 25 Beaver street, New York, N. Y.

Alexander Guttman is now associated as partner with Paul Bertuch, crude rubber broker, the firm name hereafter being Paul Bertuch & Co., with offices at 24 Stone street, New York, N. Y.

John W. Davis, Democratic nominee for President, in severing his business and legal connections in order to devote his entire attention to the campaign, has also resigned as a director of the United States Rubber Co.

H. H. Smythe, Room 605, 15 Whitehall street, New York, N. Y., is not only dealing in the usual rubber manufacturers' supplies but also handles some that are less known, such as Pontianak, cactus rubber, suc de forbe, tuno gum, etc.

William Trackman has been appointed salesman for the Lambertville (N. J.) Rubber Co., and is covering New York territory.

For the convenience of the trade in that territory the American Zinc Sales Co., P. O. Box 1428, Columbus, Ohio, has opened warehouse stocks of Azo products at the Knowlton warehouse, 93 Perry street, Buffalo, New York.

The entire turbine blading department of the Westinghouse Electric & Manufacturing Co., now at the Main Works at East Pittsburgh, Pennsylvania, is being moved to the South Philadelphia Works of the company at Lester, Pennsylvania. Work began at the new plant on July 1, and plans include full operation by October 1.

A rolling mill for the fabrication of zinc sheets is being built at Palmerton, Pennsylvania, by the New Jersey Zinc Co., 160 Front street, New York, N. Y. The organization plans a large production of corrugated and plain zinc sheets, and will supply the trade with standard sizes and gages in addition to the narrower strips now made by the company.

The Gray & Dudley Co., Nashville, Tennessee, is now one of the distributers of the tires manufactured by the Quaker City Rubber Co., Wissinoming, Philadelphia, Pennsylvania. The territory covered by the distributing company will include the city of Nashville and adjacent districts.

Equipment which will result in doubling the output of braided hose has been recently installed at the plant of the Electric Hose & Rubber Co., Wilmington, Delaware. C. D. Garretson is president.

The Triple Airless Tire Co., with factory and main offices at Manorville, Pennsylvania, was established in the year 1919, and capitalized at $1,500,000. The company manufactures "Desert Cord" and "Triple Airless" tires, and maintains branches in several foreign countries. A. C. Hileman is secretary.

Construction of a new plant for the Bedford Tire & Rubber Co., Bedford, Virginia, began recently, the buildings, measuring 60 by 230 feet, to be completed in about four months. This new organization, representing the first tire factory in the state of Virginia, plans to manufacture casings and tubes, the by-products being used in the preparation of various rubber goods. Executives include: L. R. Gills, president; W. R. Dooley, vice-president; J. J. Scott, secretary-treasurer; and T. W. Richardson, assistant secretary-treasurer.

A new carbon black plant, representing the most recent scientific development in this industry, is being built at Breckenridge, Texas, by J. M. Huber, Inc., 130 West 42nd street, New York, N. Y. The plant equipment will include the air-floating process of refining, while the modified Huber channel process will also be utilized.

Operations are now being carried on by the Edge Chemical & Rubber Co., Houston, Texas, in a new and well-equipped plant, the former building having been destroyed by fire about three months ago. The company, which specializes in the production of seamless rubber goods, is headed by Charles H. Edge, the sales manager being Charles H. Edge, Jr.

The Ratcliffe Rubber Co., 2014 Commerce street, Dallas, Texas, has as a distributer been handling Kenyon tires and tubes for the last four years throughout the state of Texas. In addition the organization is carrying a full line of mechanical rubber goods, special attention being given to the needs of oil companies. R. E. Ratcliffe is general manager.

Following recent extensions to its plant the organization known as Roth Brothers Auto Supply & Machine Co., 311-315 North Flores street, San Antonio, Texas, now represents one of the leading service stations of that state. From small beginnings the buildings have grown to the present floor space of 17,700 square feet. For the last eight years the organization has handled Fisk tires exclusively.

The Worth Mills, with offices in the F. & M. National Bank Building, Fort Worth, Texas, represents a new organization capitalized at $1,122,000 and formed for the purpose of manufacturing cord tire fabric. Products will be sold through Harding, Tilton & Co., of Boston, and the incorporators of the new enterprise believe that the city of Fort Worth offers attractive possibilities as a rubber manufacturing center. Executives of the Worth Mills include: Lloyd H. McKee, president; Rudy Copeland, vice-president and general manager; John P. King, vice-president; Floyd J. Holmes, vice-president; H. C. Meacham, treasurer; and W. B. Decker, secretary.

Altsheler & Co., 726-732 West Main street, Louisville, Kentucky, has for some time been handling Falls tires and Evergreen tubes. With increase of business the company has opened a retail store at 622 South Second street, Louisville, where a full supply of these goods will be carried.

It is reported that the Paul Rubber Co., Salisbury, North Carolina, is in involuntary bankruptcy, the organization owing in excess of $250,000, and unable to meet its obligations. The Paul system contemplated the establishment of tire factories in a number of cities, with stockholders as prospective tire buyers. The company owns a well-equipped plant at Salisbury.

A full line of mechanical rubber goods is being carried by the Daffron Belting & Supply Co., 415 Kanawha street, Charleston, West Virginia, the organization also acting as a direct representative and distributer for The B. F. Goodrich Co. W. H. Daffron, who heads the first-mentioned organization, has been a distributer of mechanical rubber goods for the last thirty years.

C. Bissell Jenkins, who formerly headed the General Asbestos and Rubber Co., Charleston, South Carolina, has resigned as president but will in the future act as chairman of the board of directors. In his place as president, Sumner Simpson, president of The Raybestos Co., has been chosen, other executives including the following: M. B. Barkley, vice-president and general manager; H. C. Simpson, vice-president; M. F. Judd, vice-president; and E. H. Jeffords, secretary and treasurer. The company reports a record volume of business during the last few months, with excellent prospects for the future.

Business operations were begun on June 14 by the Davenport and Heron Tire Co., 343 West Forsyth street, Jacksonville, Florida. Hood and Manhattan tires are being handled, as well as a complete line of automobile accessories.

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REPLETE WITH INFORMATION FOR RUBBER MANUFACTURERS.—H. C. Pearson's "Crude Rubber and Compounding Ingredients."

## The Rubber Trade in New Jersey

Conditions in some of the New Jersey rubber plants are not very encouraging for this season of the year and business in Trenton has dropped off to some extent at several of the factories. In fact, a few of the plants closed down for a few days during the Fourth of July holidays for the purpose of taking inventories. One concern was compelled to close for three weeks because of bad conditions in the boiler room. Some of the tire manufacturers are running less than normal, although July is always considered one of the busiest months. Tire manufacturers contend that while over-production is somewhat to blame, the recent drop in prices by the larger manufacturers is greatly injuring the smaller producer. One manufacturer told a representative of THE INDIA RUBBER WORLD that it was remarkable how some of the smaller producers managed to exist. Several concerns have offered free rims with every balloon tire purchased and this has proved injurious to sales of the smaller plants. Tires are now being sold at rock bottom prices in the competition between the big and small manufacturer.

The plants have practically ceased production of fire and garden hose on a large scale and some factories are taking care of small orders. Since the first of the year the manufacturers have been busy on orders for hose and the warehouses are well stocked.

### Murray Sales Conference

A sales conference of representatives of the Murray Rubber Co. from all parts of the United States was held at the general offices of the concern at Trenton, New Jersey, on July 14 and 15. Sales were reported as being very good for the past few months. The Murray company is enjoying very good business and is still operating twenty-four hours a day. The visiting representatives were given banquets at the Carteret Club and Trenton Country Club while attending the conference. A number from far away points spent a few days at the Jersey coast resorts.

### Ajax Sales Increase

The Ajax Rubber Co. gives free life insurance to its many employes. The company has already paid out several thousand dollars in claims. Many employes have large families who have greatly benefited thereby. The Ajax company is putting a new inner tube on the market called "Gaspac." This new tube is sealed hermetically in a metal container filled with a harmless, non-inflammable, non-explosive gas that preserves rubber indefinitely. The company is running about 80 per cent normal with a goodly number of orders being received. There has been a large increase in sales over the previous month, with a bigger production.

### New Jersey Notes

Trenton's rubber industry is to be symbolized in a sculptured tablet to be placed upon the outer walls of the new 14-story Trenton Trust Co. building. The design will represent natives collecting the latex from rubber trees in a tropical forest.

Whitehead Brothers Rubber Co. reports business as improving, with an output larger than that of the previous month.

William W. McMahon, general manager of the Ajax Rubber Co., has been made chairman of a membership drive committee of the Trenton Chamber of Commerce to secure new members for that organization.

The Spartan Rubber Co., Yardville, New Jersey, was compelled to close down for three weeks because of improvements being made in the boiler house. This was at a time when the company was fairly busy.

The Bergougnan Rubber Co. reports business as slackening up somewhat with a general cut in production of both tires and tubes. The company believes the general cut in prices by the larger concerns is hurting business of the small tire manufacturer.

The Acme Rubber Manufacturing Co. has installed extra equipment in the jar ring department and is very busy in that line. More help has been engaged in sorting and packing the jar rings.

Joseph A. Miller has resigned as treasurer of the Sterling Tire Corporation, Rutherford, New Jersey, and has been succeeded by W. A. Ryan, who for several years has been auditor and assistant treasurer. A. A. Altschuler continues as president, Otto Basten as vice-president, and Charles A. Bates as consulting sales manager. J. B. Rourke, factory superintendent, has been made assistant treasurer and assistant secretary, offices heretofore held by Mr. Ryan. The plant is now running at about 75 to 80 per cent of its maximum capacity, which it is believed will be soon reached.

In the July issue of THE INDIA RUBBER WORLD it was incorrectly stated that Henry L. Joyce is vice-president of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey. Mr. Joyce has not been connected with that organization in any way for several years. J. C. Bolt is treasurer.

The Combination Rubber Co. is one of the busiest Trenton plants and is operating three shifts. The output is about 800 tires and tubes daily, a big increase over production when the concern was located at Bloomfield, New Jersey. The company is behind in orders and expects a very busy season from now on. The company has taken over part of the production of the Acme Rubber Manufacturing Co.'s tire department. Both concerns are controlled by the same interests.

The Globe Rubber Tire Manufacturing Co. has created two new territories for southern agents. P. R. Arbogast, with offices at Frankfort, Kentucky, has been placed in charge of the Kentucky district. J. H. Fletcher & Co., Inc., of Winston-Salem, North Carolina, will not only look after the territory in that state but also in South Carolina and Virginia.

The Thermoid Rubber Co. some time ago established a plan to have employes report to work on time. The company pays a bonus of 25 cents a day to all mechanics who report at the plant on schedule time in the morning, and this adds greatly to the efficiency of the organization.

Mr. and Mrs. Edward B. Fulper, Trenton, New Jersey, are home from Hot Springs, Virginia, where they spent several weeks. Mr. Fulper is vice-president of the American Oil and Supply Company.

A pair of rubbers made twenty years ago by the Lambertville (N. J.) Rubber Co. was returned to that concern recently from the store of C. W. Hub, Rhinebeck, New York. The rubbers were in stock a score of years and appeared to be in good condition.

F. M. Yorston has taken over the business formerly conducted by H. S. Ward, at 146 Church street, New Brunswick, New Jersey, and has been made distributing agent of The B. F. Goodrich Rubber Co. for Middlesex County.

At the request of stockholders and creditors, Vice-Chancellor John H. Backes has named Charles D. Roth, of New Brunswick, New Jersey, as temporary receiver of the Howe Rubber Corporation, New Brunswick, New Jersey. Assets of the concern are set forth as $797,975.62, and liabilities were said to total $1,336,672.83. George M. Griffiths, of Cleveland, Ohio, was designated as president about two months ago and directed to take over the operation of the plant, but the effort failed because funds were lacking. Mr. Griffiths is now working on a plan of reorganization for submission to the stockholders.

Operations at the plant of the Empire Tire & Rubber Corporation, Trenton, New Jersey, during the first three months of 1924 were 51 per cent greater than for the corresponding period of 1923, while prospects for the future continue to be excellent. The factory is running twenty-four hours a day.

The Pocono Rubber Cloth Co., Trenton, New Jersey, has acquired the former factory of the H. D. Lee Mercantile Co., on East State street, and will take possession at once for a new plant. Equipment will be installed at an early date.

The Globe Rubber Tire Manufacturing Co. announces a 100 per cent increase in the production of tubes and about a 40 per cent increase in tire production. The concern is giving more attention to the tire output, which includes brands for other rubber companies. Twelve hundred tubes are made daily.

The Trent Rubber Co. continues busy both at the plant at Trenton, New Jersey, and at Torrence, California.

## The Rubber Trade in Rhode Island

### Corporation Taxes

Thirty Rhode Island corporations that are directly or indirectly identified with the rubber industry are assessed on corporate excess and franchise taxes of $100,000 or more this year, aggregating $30,292,691.48, according to the levy made by the State Board of Tax Commissioners. On this assessment these corporations have to pay taxes amounting to $112,670.63.

The total revenue from the State tax on corporate excess and franchise taxes on manufacturing and mercantile corporations, and the gross earnings of public service corporations, will reach a total of $1,865,322.43. This amount represents an increase over last year of $128,059.76. The income to be derived this year from the assessment by the State Tax Commission is the largest since the board was created in 1912.

The corporate excess, upon which a tax of $4 per $1,000 is levied by the State Commission, represents the difference between the total valuation of the corporation's property in Rhode Island, and the assessed value by the city or town in which such property is located, less any exemption of non-taxable property in the state.

The Manville-Jenckes Co., Pawtucket, a new corporation this year and third in the list in size of assessment, has a corporate excess of $7,117,702 upon which it will have to pay a tax of $28,710.80. This concern takes the place of the Manville Co. and the Jenckes Spinning Co. of a year ago, which were merged into the new corporation. The combined corporate excess of the two old concerns last year was $7,753,897, so that on the whole the concern has a decrease of $576,195 as compared with a year ago.

Another new corporation resulting from the combining of the Fisk Tire Co. and the Ninigret Co. appears in the 1924 tax list with a corporate excess of $1,012,323. The American Electrical Works shows a reduction of $250,303, its corporate excess being $1,893,570, while an increase of $227,463 is shown by the Phillips Wire Co. of Pawtucket, the 1924 corporate excess being $2,107,073 as compared with $1,879,610 for 1923. A decrease of $159,759 from $2,546,115 to $2,386,356 was shown by the United States Rubber Co. of New York.

The following is a list of the manufacturing, mercantile and miscellaneous corporations connected with the rubber industry and its allied and kindred branches which pay a tax on a corporation excess of $100,000 and over, with the amount of assessment and tax on each:

American Electrical Works, Phillipsdale, $1,893,570.57, tax $7,574.55; American Multiple Fabric Co., $132,655.54, tax $530.62; American Wringer Co., Woonsocket, $179,458.71, tax $717.83; Anchor Webbing Co., Pawtucket, $198,108.47, tax $792.43; Arbeka Webbing Co., Pawtucket, $149,595.87, tax $598.58; Atlantic Tubing Co., Cranston, $183,344.86, tax $733.37; Bourn Rubber Co., $237,383, tax $949.53; Carolina Co., Carolina, $166,102.41, tax $664.40; Collyer Insulated Wire Co., Pawtucket, $697,225.72, tax $2,788.90; Davol Rubber Co., $527,674.51, tax $2,110.69; Direct Rubber Co., $226,950.97, tax $907.80; Everlastik Inc., Chelsea, $201,314.17, tax $805.25; Fisk Rubber Co., New York, $1,012,323.46, tax $4,049.29; Glendale Fabric Co., Easthampton, $186,638.22, tax $746.55; Hamilton Web Co. (No. 1), Hamilton, $169,666.10, tax $678.66; Hill & Lacross Co, Cranston, $116,656.29, tax $466.62; Hope Webbing Co., Pawtucket, $1,207,155, tax $4,828.62; Manville-Jenckes Co., $7,177,702, tax $28,710.80; Mechanical Fabric Co., $512,222.03, tax $2,048.88; Moore Fabric Co., Pawtucket, $190,054.41, tax $760.17; National India Rubber Co., Bristol, $773,537.06, tax $3,094.14; New England Butt Co., $295,344.02, tax $1,181.37; O'Bannon Co., West Barrington, $197,515.58, tax $790.06; Phillips Wire Co., Pawtucket, $2,107,073.33, tax $8,428.29; Tubular Woven Fabric Co., Pawtucket, $594,582.35, tax $2,378.32; United States Rubber Co., of New York, $2,386,356.65, tax $9,545.42, and Washburn Wire Co., Phillipsdale, $1,035,717.85, tax $4,142.87.

### National Closed for Summer Period

All departments of the National India Rubber Co.'s plant at Bristol are closed and all production is at a standstill. The wire division will probably resume early in August, but the canvas footwear division is not expected to begin operations again until October 1. When operations are resumed, however, it will be at a wage reduction that will average about 18 per cent. The prolonged cessation in operations and the reduction in wages are of unusual concern, as many of the employes are confronted by the company's announcement that employes must live in Bristol. This curtailment of activities was the subject of a meeting of the business men of the town, at which comment was made on the possibilities of Bristol landlords raising rents for the newcomers, and it was stated by Edward I. Cooper, manager of the Bristol branch of the National Company, that such a move would be met by a change in policy on the part of the company. It was brought out at this conference that if work could be provided for any of the employes of the company who were in straightened circumstances, the company would give preference to such cases in making repairs and other work.

The wire sales department of the National India Rubber Co. held its annual outing at Poppasquash Saturday afternoon, June 27, making the trip by automobiles. There were athletic events and swimming contests. A basket luncheon was served and a pleasant time enjoyed by all.

John H. Drury, for more than half a century connected with the National India Rubber Co. at Bristol, where he is still employed in the shipping department, on July 6 observed the 86th anniversary of his birth at his home, 326 Wood street, in that town. For 26 years he was a bootmaker at the factory of the National company until about 1898, when he was promoted to the shipping department.

### Rhode Island Notes

After a shutdown of nearly a fortnight the Columbia Fabric Co., at Shannock, resumed operations on full time on July 7. The plant manufactures elastic webbing of silk, rubber and cotton for garters, suspenders and other purposes. During the past year the plant has not only improved and increased its facilities by building a handsome new brick building for its offices but has also added 10,000 feet of floor space and a quantity of new looms. Improving the electric wiring in the factory by installing enclosed wiring was recently completed. Ordinarily the plant employs 250 hands.

The wage cut of ten per cent, which was announced just after the middle of June, went into effect when the plant of the American Wringer Co., Woonsocket, resumed operations on July 7. The plant, which normally employs about 500 hands, began July with a reduced roster of operatives, less than 400 being engaged, although the officials stated that they anticipated an improvement in business within a short time as they claimed that the reduction in wages would tend to bring the prices to a level with other concerns.

The Lawrence felting plant at Millville, went on a five-day schedule instead of four days, to make up for time lost during the two weeks' vacation period early in July.

According to a decree that was entered before Presiding Justice Willard B. Tanner in the Superior Court for Providence County on June 25, Arthur Henius of Providence and E. H. Small of Fall River are to receive $15,000 as a fee for their services as temporary receivers of the Walker Webbing Co., which has plants in Providence and Brockton, Massachusetts. The law firm of Tillinghast & Collins of Providence is to receive $2,500 as counsel fee.

The second report and final account of the temporary receivers regarding the Rhode Island property shows a net cash balance of $94,541.69.

The Alice and Millville plants of the Woonsocket Rubber Co., which closed on June 27, will reopen August 4, which means a shutdown of only five weeks instead of seven as was at first announced. During the shutdown necessary improvements have been made in both plants.

## The Rubber Trade in Massachusetts

Seasonal dullness continues in the Massachusetts rubber trade, but with the promise of early improvement. The strength and integrity of both of the presidential nominees has done much to restore confidence in the political situation, and already a better business tone is noticeable. Output in most lines has been in low volume, but in certain lines, notably heels and soles, the latter part of July brought a better demand. Mechanical lines generally have become a little more active with the more optimistic industrial outlook.

Tire output is low, though the smaller producers of this state with a more stable replacement demand largely in New England are less affected by the slump in motor vehicle production than the larger producers of Akron. Insulated wire demand has fallen off, though great building activity continues and rubber flooring output increases.

Druggists' sundries are in good production but at highly competitive prices. Rubber cloth business is described as satisfactory. Rubber footwear factories not already closed will have their summer shutdown in August, following which larger production schedules are anticipated.

### Rubber Paving Withstands Severe Test

One of the freight trains operated by the Union Railroad jumped the rails on the Northern avenue bridge recently, tearing up the wooden paving and flooring of the bridge and also running over the rubber pavement which was laid about three months ago. Very much to the surprise of the bridge engineers, they have been unable to find any mark left by the heavy freight car wheels or any damage to the rubber paving. This illustrates the ability of rubber paving to stand hard use and accidents.

### National Shoe and Leather Exposition and Style Show

This, the fifth show of its kind, which was held in Mechanics Building, Boston, from July 14 to 17 inclusive, under the direction of Chester I. Campbell, has again justified itself both in sales and attendance. Although fewer firms exhibited this year than last, and fewer buyers came from distant cities, it is said that more orders were booked than during any preceding show.

In respect to attendance, the exposition has ceased to be merely a shoe trade show. Despite the excessive heat it was attended by large and interested throngs of the general public, to the surprise and pleasure of the exhibitors. Such great public interest in style changes and manufacturing methods would soon put this exposition on a plan with the Textile and Graphic Arts shows were the goods in process of manufacture shown by machinery in operation as well as samples of the finished product. It would prove a vitalized and highly effective form of educational process advertising.

As in the past, rubber heels, soles and footwear were conspicuous among the goods displayed in attractively arranged and decorated booths, and by models in the style revue on the runway. Of the 149 exhibits 15 were devoted to rubber products. Heels and soles were shown by the Avon Sole Co., Avon; Bloomingdale Rubber Co., New York; Gleasonite Products Co., Brockton; Goodyear Tire & Rubber Co., Akron; Alfred Hale Rubber Co., Atlantic; Hanover Rubber Co., West Hanover; Panco Rubber Co., Chelsea; Panther Rubber Manufacturing Co., Stoughton; United Leather & Rubber Co., Boston; United States Rubber Co., New York.

Complete lines of rubber and rubber and canvas footwear were shown by the Cambridge Rubber Co., Cambridge; Firestone-Apsley Rubber Co., Hudson; Hood Rubber Products Co., Watertown; United States Rubber Co., New York.

The exhibit of the United Shoe Machinery Corporation, Boston, was as usual one of the outstanding features of the show, while Everlastik, Inc., Chelsea, showed the importance of elastic webbing in the footwear and allied trades.

### Crêpe Soling at the Style Show

The rapidly growing popularity of the crêpe rubber sole was clearly indicated throughout the show by the large number of leather footwear concerns showing handsome lines of sport and walking shoes equipped with them for both men and women. Crêpe soles for the trade were displayed by the Avon Sole Co., Avon, and the Alfred Hale Rubber Co., Atlantic.

Those in attendance had an opportunity to see a unique and comprehensive exhibition of natural plantation finished crêpe soling rubber which was being displayed by F. R. Henderson & Co., Inc., crude rubber importers, New York, N. Y. Great interest was shown in this exhibit by shoe manufacturers and shoe retailers

**Exhibit of F. R. Henderson & Co., Inc.**

as well as the general public. It enabled innumerable visitors to see just what natural plantation finished crêpe soling rubber is, to learn how it is handled to the best advantage and to examine sample shoes with the soling attached both by leather and crêpe rubber welts. The sample shoes were kindly furnished by several prominent manufacturers, and included walking as well as sport shoes for men and women, also canvas work shoes equipped with them.

The natural plantation finished crêpe owes its merit to its uniform gristly texture which insures unequaled durability as well as permanent flexibility and resilience. It is imported from the Far East in standard size sheets, 36 by 13 inches, and in thicknesses ranging from 3/32 to ½ inch.

The educational value of this exhibit was further enhanced by a display of rubber seeds, seedlings, immature and matured fruits, latex and coagulated latex. Photographs showing the jungle, felling, burning, clearing, planting, tapping, collecting the latex and the factory preparation of the various grades of plantation rubber were interesting and instructive, especially to those not familiar with the plantation rubber industry.

Common opinion seems to be that wider use of the crêpe rubber sole is assured for walking as well as sports wear. That it will ultimately supplant the compounded and vulcanized sole, however,

is generally believed to be unlikely. Price is a prime consideration, and at 45 to 48 cents a pound crêpe soling cannot compete with compounded soles, especially in the shoe repair trade. While rubber manufacturers assert that the compounded sole will ultimately drive out its newer competitor, the merits of the crêpe sole for sports wear are such that it seems more probable to believe that both will find widespread use for some time to come.

### Massachusetts Notes

The long heralded restoration of Harvard Bridge between Boston and Cambridge has been begun, and to the great disappointment of the many promoters of rubber paving it has been decided by the engineers in charge to surface the bridge with grouted granite block paving; this despite the apparent success of the recent rubber paving installation on the Northern avenue bridge in Boston. Price and the feeling that rubber paving is still a comparatively unknown quantity led to the decision. The proponents of rubber paving are confident, however, that the Northern avenue bridge experiment will result in other larger installations here later.

The Monatiquot reclaiming division of the Stedman Products Co. at South Braintree, Massachusetts, is now running full time, and reports a favorable demand for its goods. Modern equipment has been installed in the reclaiming plant, which has been completely rebuilt.

H. A. Astlett & Co., crude rubber importers, New York, N. Y., are now represented in the Boston territory by J. E. Odell, 200 Devonshire street, Boston, long well known to the local rubber trade.

The Quabaug Rubber Co., North Brookfield, is among the heel and sole manufacturers of this state which have gone into the production of crêpe rubber soles. Herbert T. Mason, president of the company, reports a steadily increasing business in this line, the July output having exceeded that of June despite its being at about the peak of a dull season.

The Panther Rubber Co. of Stoughton, Massachusetts, closed its plant following a walkout of the employes, and has transferred its orders in the local factory to another plant, which is located in Chelsea. A 14 per cent cut in wages was made last week, and yesterday another cut of 6 per cent was made, following which the employes walked out.

## The Rubber Trade in Ohio

Approximately 30,000 rubber workers returned to the factories in the Akron district when the July inventory shutdown was over and production resumed on a seasonally normal basis. It is estimated that the present reduction tickets are somewhere in the neighborhood of 75,000 tires a day, which figure it is believed will be maintained during at least two months and perhaps longer when the early fall business gets under way.

The lay-off, which lasted from one week to 10 days, according to the different factories, has aided the reduction of inventory more than 500,000 tires, which, coupled with the sales made during the period, has probably brought the completed tires in the hands of the dealers and the manufacturers to somewhere around 17,000,000, according to some of the leading authorities. This new estimate compares with 19,000,000 estimated in the hands of dealers and manufacturers two months ago. Reduction of inventory was one of the principal reasons for the shutdown.

The reduced tire tickets now in force are duplicated in the other rubber departments. The mechanical goods departments have slumped just a little further as far as production is concerned and output is now estimated at approximately 50 per cent of normal. Some lines, especially hose, are predicted to increase in the near future, according to semi-official information obtainable from department heads.

Druggists' sundries continue very slow, due to the ultra conservative buying policies of the wholesalers. The departments are therefore working at points slightly under those which usually obtain at this season of the year.

Footwear departments operating at 50 per cent of normal have shown little change during the past month. Reclaimed rubber, because of low priced crude rubber, is correspondingly low, with the result that operations are not anywhere near capacity. No unusual change in conditions generally is looked for during the next two months.

### Goodyear Building Government Dirigibles

The Goodyear Tire & Rubber Co. has received orders from the United States Government for six dirigible airships which are to be completed within the next year. The orders are added to the one for the largest semi-rigid ship ever built in the country which is now under construction at the Goodyear plant.

The new ships are of the T.C.1 and the T.A. types. The three T.C.1-type ships will be 196 feet long and will have a displacement of 200,600 cubic feet, while the three T.A.-type ships will be 162 feet long and have a displacement of 130,000 cubic feet.

### General Tire Continues Actively

The General Tire & Rubber Co. continues to break previous records as far as sales and earnings are concerned, according to reports. It is stated that during the first six months of the present year the company showed total sales of more than $6,750,000 as compared with $9,000,000 reported for the same period last year, while its net profits on this business amounted to $1,200,000, the same as was netted on a total of $9,000,000 worth of tire sales during the whole of 1923. The earnings amount to more than $120 a share on the common stock on the basis of this stock previous to the declaration of a stock dividend of 100 per cent at the last annual meeting.

Production capacity has been increased through the addition of equipment and present production is approximately 5,500 tires a day. Officials also state that the company will show profits despite the price reductions which were made effective the first of the month.

### Pan-American Delegation in Akron

Twenty-eight delegates from the Pan-American countries have been studying American highway conditions and methods of road construction. A few days were spent in the city of Akron, Ohio, where W. O. Rutherford, as chairman of a special committee, conducted the delegation through some of the rubber factories of the city. On the committee with him were F. A. Seiberling, president of the Seiberling Rubber Co.; H. S. Firestone, president of the Firestone Tire & Rubber Co.; George M. Stadelman, president of the Goodyear Tire & Rubber Co., and W. F. Pfeiffer, secretary and treasurer of the Miller Rubber Co.

Representatives from all the larger and smaller rubber companies also attended a luncheon, where plans for the future development of the Pan-American countries were discussed.

### Balloons for Buses and Trucks

One of the largest automobile tire companies in this district states privately that within the next few months it will be ready to announce an entirely new line of balloon tires designed especially for buses and trucks.

Several of the larger companies, including the Firestone Tire & Rubber Co. and the Miller Rubber Co., have announced that balloon tires have been perfected sufficiently to advise their use on lighter buses and trucks, although thus far there has been no wholesale entering of the bus field with balloon tires.

The statement by the large company referred to regarding its readiness to make the balloon tire announcement is almost certain to indicate that the rubber tire manufacturers as a whole are working on this problem, although similar statements are not available from other makers at the present time.

### Akron Notes

Francis Seiberling, a director of the Goodyear Tire & Rubber Co., has been named a vice-president of the Mohawk Tire & Rubber Co., succeeding M. E. Mason, who recently resigned. Mr. Seiberling is a relative of Frank A. Seiberling, organizer and long-time president of the Goodyear Tire & Rubber Co., and now head of the Seiberling Rubber Co., and has been connected with the rubber industry as a director and attorney for many years.

Litigation instituted in connection with a fabric claim against the former Portage Rubber Co., and recently carried to the Supreme Court at Washington, will delay the final settlement of the company's business, according to George D. Bates, trustee in bankruptcy. The company has paid a total of 52 per cent to the creditors and expected to pay between three and five per cent additional. This last payment is held up by the litigation to be argued before the Supreme Court in October.

It is reported that the Mohawk Rubber Co. sales for the present year on the basis of the showing made thus far this year will be in the neighborhood of $3,500,000 as compared with sales of approximately $2,000,000, said to have been recorded during the previous year. The company has shown remarkable improvement during the past six or eight months and is reported to have completely wiped out its bank indebtedness. Operations are said to be showing satisfactory profits.

The Goodyear Tire & Rubber Co. and the Miller Rubber Co. each announced a new tire during the early part of the month and in both instances the superior qualities of the tire were predicated upon superior fabric material used. The Goodyear "Supertwist," a balloon cord, will, according to the company's statements, give twice the service that is now given by the average cord. The special feature of the new tire is a new process of preparing cord material. The new Miller bus tire is designed and built with a view toward both speed and heavy loads. The fact is stressed that the fabric material used in the new tire is such that more than 30 per cent is added to the service rendered.

Frank A. Seiberling, president of the Seiberling Rubber Co., is the head of a new syndicate which has offered to purchase 13,000 shares of the common stock of the Wellman-Seaver-Morgan Co. The company is a large manufacturer of hydraulic machinery and formerly made rubber factory equipment.

Myron J. Jones is now acting as director of labor for The B. F. Goodrich Co., Akron, Ohio.

The B. F. Goodrich Co. has completed the first of three pneumatic tires measuring 64 by 14 inches, which are said to be the largest pneumatic tires ever built. They are to be used by the government on new bombing planes now being constructed. The largest tire previously made by the Goodrich company measured 51 inches by 12 inches.

Work of installing new equipment at the Lambert Tire & Rubber Co. to give this plant a daily production capacity of 800 cushion tires, is practically completed, according to unofficial information available here. The company reports that the demand for cushion tires continues to increase rapidly.

### Ohio Notes

The Aetna Rubber Co., 811-815 East 79th street, Cleveland, Ohio, has purchased at Ashtabula, Ohio, the land, buildings and machinery formerly owned by the Silurium Manufacturing Co., and also the Ashtabula Manufacturing Co. With increased facilities the Aetna organization will enlarge its molded and wrapped goods departments, and also begin the manufacture of dipped household gloves. The executive personnel, which has been unchanged for the past three years, includes the following: A. J. Huston, vice-president and sales manager; E. T. Slinkard, secretary and treasurer; S. T. Campbell, general manager; H. J. Kappler, factory manager; and H. J. Benyon, production superintendent at Cleveland.

A severe cyclone recently passed through the city of Sandusky, Ohio, demolishing many residences and factories. The Barr Rubber Products Co. fortunately escaped with little injury, operations being resumed after a shutdown of two days.

The Scioto Rubber Co. has since May 10 been operating the plant formerly owned by the Chillicothe Tire & Rubber Co., Chillicothe, Ohio. Under the new management there is a daily output of 200 self-mending tubes, this production soon to be increased to 500 tubes. The company plans to open distributing branches in both Kansas City and New York.

An offer of $20,000 for the goodwill and trade name of the Marathon Tire & Rubber Co. has been tendered to the receiver for the plant, it is semi-officially stated. The affairs of the company will be settled early in August, according to present plans.

E. H. Gorsuch has become connected with The Faultless Rubber Co., Ashland, Ohio, and will eventually take charge of that organization's experimental laboratory. R. R. Olin, who is chief chemist, is engaged in important experimental work.

The McLean Tire & Rubber Co., East Liverpool, Ohio, not having sufficient working capital to maintain plant operations, has passed into the hands of C. V. Beatty, receiver. Plans have not yet been formulated as to the future disposal of the property.

H. W. Watson is now manager of the branch maintained at Columbus, Ohio, by The Mason Tire & Rubber Co., Kent, Ohio.

W. E. McCormish, of the Rubber Engineering Co., Akron, Ohio, is now acting in the capacity of factory manager for the National Tire & Rubber Co., East Palestine, Ohio.

H. H. McCloskey, for many years connected with the Goodyear organization, is now comptroller of The Mohawk Rubber Co., Akron, Ohio.

John F. Dush has been appointed manager of the Toledo, Ohio, branch maintained by The B. F. Goodrich Co., Akron, Ohio.

## The Rubber Trade in the Midwest

### Midwest Notes

The directors of The Cutler-Hammer Manufacturing Co., Milwaukee, Wisconsin, have appointed F. R. Bacon chairman of the board after serving the organization as president for the past 27 years. His successor as president is B. L. Worden. Since Mr. Bacon's connection with the Cutler-Hammer company 27 years ago that concern has in addition to the production of motor control equipment later developed other electrical devices, such as lifting magnets, battery charging equipment, magnetic clutches, electric brakes, lamp specialties, industrial electric heating units, and, more recently, radio rheostats, switches and sockets.

Dunlop tires are being carried by the organization known as the Versen Tire & Battery Service, 3747 South Jefferson avenue, St. Louis, Missouri. Walter L. Versen heads the distributing company.

## The Rubber Trade on the Pacific Coast

### Electric Power Shortage

The main worry of Pacific Coast rubber manufacturers, especially in the Southwest, during the past month has not been volume and profit but present and prospective power shortage. Many of them have been wholly dependent upon hydro-electric power, which for many years past has been ample for their needs, but the scanty rains of last winter have left the reservoirs in the high Sierras with comparatively little water for the power stations, and the electrical companies and municipalities supplying current for industries have been obliged to beg the latter to reduce consumption to minimum needs, or even less. Nor is it at all certain that relief will be experienced for three months or more, or until

the rainy season returns. Power companies in the northern part of California, which suffered less from drought, are doing something to relieve the less fortunate southern section; but the actual benefit to factory owners is small.

However, like the proverbial ill wind, the power shortage although it has given rubber manufacturers much anxiety, has also fairly deluged them with orders for belting. As the electric power ran low, factory owners hustled for gas, gasoline, and steam engines, and they found it was necessary to get new rubber belting equipment. It is believed that a fair amount of this emergency outfitting of rubber belting will be permanent and bring repeat orders.

The rubber trade on the Coast has slowed down generally during the past month, yet branch houses, factories, and distributers are quite unanimous in reporting total sales, if not average profits, much higher for all lines than for July, 1923; and this despite a marked lessening in building activity.

### Goodyear Operating Actively

The Goodyear Tire & Rubber Co. (California) has been operating its Los Angeles plant close to the limit. The mid-month daily production of casings averaged over 4,500 and that of inner tubes over 6,000. June business was fully 50 per cent better than that of any preceding June, and July was running much above any similar period since the big factory was started. While the works have not yet been troubled much with electric power shortage, the management is nevertheless apprehensive that some decided retrenchment will have to be made before the summer is over. Of late it has been doing its share with other factories, at the request of the Los Angeles Chamber of Commerce, to conserve electric power approximately 25 per cent by cutting down current for lights, elevators, etc.

### Pioneer Rubber Mills Holds Sales Conference

The annual sales convention of the Pioneer Rubber Mills, 343-353 Sacramento street, San Francisco, California, was held at the Commercial Club of San Francisco from June 10 to 13 inclusive. Many representatives of various branches and departments attended, the principal topic of discussion at the sessions being the proposed enlargement of the company's garden hose business. All kinds of hose are, however, manufactured at the Pioneer plant in Pittsburg, California, as well as rubber transmission, conveyor and elevator belting, sheet and piston rod packing, and rubber heels.

Because of increasing operations the company has been compelled during the last five years to enlarge its plant several times, while during this period sales have increased several hundred per cent. Executives of the organization include: G. S. Towne, president; D. D. Tripp and H. R. Mansfield, vice-presidents; W. L. Reed, secretary-treasurer, and C. M. Bliven, chief engineer.

### Pacific Coast Notes

The Samson Tire & Rubber Co., Compton, California, a Los Angeles suburb, is one of the busy tire concerns on the Coast, having increased its dealer list 300 per cent, and materially strengthened its financial position. It has also been improving its equipment steadily, and is running three shifts daily. Instead of balloon tires, the company makes interchangeable tires with super-size molds that have the same decimal sizes as balloons but more plies. This type, the manufacturers contend, will appeal to motorists who desire better riding comfort but object to buying new wheels, and also to higher cost of balloons.

The Paragon Rubber Works, 4827 Huntington drive, Los Angeles, California, has of late been confining its production largely to tire repair stock, of which it makes a large variety. President H. G. Coggswell has just returned from an extended trip through the East and Midwest during which he visited several of the larger rubber factories.

Wesley D. Smith, Southern California branch manager of the Keaton Tire & Rubber Co., has been elected president of the Los Angeles Automobile Trade Association.

The West American Rubber Co., 400 N. Avenue 19, Los Angeles, California, has recently been overhauling its plant preparatory to larger production of general mechanical rubber goods and several rubber specialties. Trade is particularly good in oil field supplies. Douglas Radford is president.

That it is making 50 per cent of the brake lining used on the Coast is the claim of the E. M. Smith Co., 618 Clarence street, Los Angeles, California, and of which E. M. Smith is president. Another product of which the company has a large outturn is rubber belting, and considerable business is done in general mechanicals, requiring the factory to work night and day. The company maintains a subsidiary asbestos plant at Downey, which, it is said, has the best equipment for its line of products to be found west of Chicago, and the business of which has doubled within a year.

The Reynolds Rubber Co., 4829 Huntington drive, Los Angeles, California, is another new rubber concern on the Coast. It specializes on removing old solid tires from rims and vulcanizing on new and rebuilt solids, and it finds business steadily growing.

Cactus Manufacturing Co., which has long operated at 7322 S. Vermont avenue, Los Angeles, California, has just opened a new plant with 15,000 feet of floor space at 914 E. 59th street and has installed considerable special machinery for making its specialty—the Cactus boot and patch, an article of heavy tire fabric in which numerous steel needles are imbedded to make it slip-proof. C. J. Emmons is general manager, and he reports a constantly widening market for the product in all the western states.

The B. F. Goodrich Rubber Co.'s Pacific Coast branches report business much ahead of last year's January to July record in all lines. Much satisfaction is expressed with the repeat orders on balloon tires, particularly.

The Reilly Rubber Co., 2432-2434 E. 56th street, Los Angeles, California, of which J. R. Reilly is the head, specializes on high grade red and gray rubber inner tubes, and has increased production from 1,000 a day in May to 1225 in July. To guard against a possible repetition of electric power shortage, gas engines are being installed. The company has just entered upon the production of golf balls, but will first conduct a series of exacting tests before putting them on the market.

The Huntington Rubber Mills, Portland, Oregon, find, despite the general slowdown in the shoe repair trade, a steadily growing demand for rubber soles and heels, and they expect soon to establish a live selling agency in the East. Other rubber goods made by the mills are general mechanicals, a patented button and jar ring, and an automobile shock absorber, all of which are selling well. Harry Huntington is president and general manager.

Business excellent, is the report of the Columbia Tire Corporation, whose factory was opened for production a year and a half ago in Kent, a suburb of Portland, Oregon. The concern, which has a capital of $3,000,000, of which about one-half has been issued, specializes on C-T-C tires and tubes, and its executives are all experienced tire men. It boasts of being the second largest manufacturer of tires on the Pacific Coast, and its productions are well distributed in nine western states. According to Treasurer Lewis Wyman, sales have increased so largely in the Southwest that arrangements are being made to maintain a warehouse there for Southern California and Arizona distributers.

An active bidder for business in the Northwest is the Spreckels "Savage" Tire Co., San Diego, California, and which recently established a branch in Portland, Oregon, at 414 Stark street with Vincent Walters as manager.

The Gates Rubber Co., Denver, Colorado, has opened a new headquarters for the Northwest in the Western Union building,

Portland, Oregon. L. A. Sparks is division manager for the territory.

Some idea of tire market possibilities in California may be gleaned from the automobile registrations in the State up to July 1. They were: 1,005,149 passenger cars, 124,502 trucks with pneumatic tires, 38,027 trucks with solid tires, 10,295 motorcycles, and 12,231 trailers.

The Bra-den Tire & Rubber Co., 325 W. Pico street, Los Angeles, California, which has a well-equipped factory at Norwalk, California, recently entertained 800 of the 2,000 stockholders at Foresters' hall, Los Angeles, where addresses were made by President Charles H. Braden, organizer of the company, and Will G. Farrell of the Chamber of Commerce. It was announced that the "Wayne" weftless fabric would be used in the manufacture of "Bra-den-Wayneway" balloon tires. The tires, it is said, will not only equal standard tires in quality but sell at a lower price. The Bra-den company is capitalized at $1,000,000, of which one-half the stock has been issued.

With all departments running at full capacity, and some running two and others three shifts a day for seven days a week, the Pioneer Rubber Mills, Pittsburg, Contra Costa county, California, is doing its best to overtake the orders which have accummulated for belting, hose, and mechanicals. Business is away ahead of last summer's average.

The American Rubber Manufacturing Co., Park avenue and Watt street, Oakland, California, has just completed a $40,000 addition to its plant, and installed a new 20-foot belt press and other machinery. The company produces transmission, conveying, and gold dredge stacker belting, and water, steam, air, oil suction and discharge, acid, chemical, sand blast, air-brake, and single and double-jacketed fire hose, as well as valves, mats, and matting. N. S. Dodge is president.

The working force of the Spreckels "Savage" Tire Co., San Diego, has been increased to 230 with a daily payroll of over $1,500. Some of the departments are working on two and three shifts a day. From an outturn of 850 tires a day in June the production in July rose to 950 daily. Balloon tire production is fourteen times greater than six months ago.

The business of the Samson Tire & Rubber Corporation, 410 West Pico street, Los Angeles, California, has been greater to date in 1924 than for the entire year 1923, while sales in April, May and June have shown each month a gain over the corresponding period of last year of from 41 to 67 per cent. Since early spring the plant has been run on a 24-hour basis. A. Schleicher is president.

The Seattle Suspender Manufacturing Co., 1213 First avenue, Seattle, Washington, represents a new organization, the first to produce its special line of goods in that state. The company's executives include L. H. Redden and M. E. Dow.

A two-story brick warehouse and office building has been recently erected at Sprague avenue and Cowley street, Spokane, Washington, for the Goodyear Tire & Rubber Company of California, Inc.

The Cummings Tire Co., Inc., 104 North Broadway, Portland, Oregon, has been in business since 1917, the present concern, capitalized at $18,000, having been organized to take over the going business of the Cummings-Carson Co., after the withdrawal of several of the partners. United States solid and pneumatic tires are being carried, while the Cummings organization is also distributer throughout Multnomah County of Mason cord casings. E. H. Cummings is president and W. C. Mason secretary and treasurer.

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FAVORABLE REPORTS AS TO BUSINESS CONDITIONS HAVE BEEN received from Joseph R. Martin & Co., a Canadian representative of the United States Gauge Co., Board of Trade Building, Montreal.

## Canadian Notes

Following the decline in tire prices in the United States, manufacturers on the other side of the line have made reductions in cord and fabric tires and tubes, ranging from 7½ to 10 per cent. There is a good volume of business being transacted at the present time and Canadian manufacturers feel that these reduced prices made when motoring is at its height should have a decided effect on business and that the volume of sales will increase.

A reduction of 5 per cent on rubber transmission belting took effect recently. For first grade the discount is now 36 per cent; 2nd grade, 42 per cent; 3rd grade, 52½ per cent.

The shareholders of the Oak Tire & Rubber Co., Ltd., Toronto, Ontario, are anxious to know the real condition of the company and are making inquiries over the director's subscriptions. The deficit of the company now exceeds $122,000 with last year's losses.

The Tiger Tire & Rubber Co., Ltd., Toronto, Ontario, has gone into liquidation. There is an issue of bonds outstanding, approximately $150,000, which is chiefly held by the company creditors, and it is expected the assets will be sufficient to take care of this liability only. The Tiger Tire & Rubber Co. was formed in the early part of 1921 with its head office in Toronto and factory at Belleville. The capital outstanding is over $500,000 in preference shares and $1,050,175 in common shares. An offering of the shares of the company was made in Toronto and vicinity and the stock was distributed among 4,000 shareholders. An initial dividend was paid about October, 1922, on the preferred shares but none since.

The Canadian Car & Foundry Co., Ltd., announces the appointment of R. J. Yonge as general sales manager succeeding D. R. Arnold. Mr. Yonge was for several years general sales manager of the Canadian Consolidated Rubber Co.

O. H. Hymmen, formerly Montreal representative for the Kaufman Rubber Co., Ltd., Kitchener, Ontario, has severed his connection with that firm.

Ross H. McMaster, vice-president of the Steel Company of Canada, Limited, has been elected to the board of the Canadian Consolidated Rubber Co., Ltd., Montreal.

Joe O'Mara in the course of a recent interview stated that in the extensive tests made by the K & S Tire & Rubber Goods Co., Ltd., Toronto, Ontario, of which he is managing director, it was demonstrated that, in addition to the well known comfort and traction features, balloon tires increase speed and gasoline mileage from 10 to 25 per cent.

R. P. Buchanan, better known in the West as "Bert," died at Saskatoon, Saskatchewan, the past month. At the time of his death he was associated with the Northern Rubber Co.

The Firestone Tire & Rubber Co. of Canada, Ltd., is building a special addition to its plant at Hamilton, Ontario, to take care of its gum-dipping process. The new structure is of reinforced concrete with a steel superstructure. The Firestone company reports a sales increase of 64 per cent for the first quarter of 1924 over a corresponding period last year.

A full line of rubber footwear, as well as tires and tubes, is being carried by The F. E. Partridge Rubber Co., at its new branch, 68 St. Antoine street, Montreal.

Executives of the Goodrich organization state that the name of the parent company, an Ontario corporation, has been changed to B. F. Goodrich, Limited, while the selling company is to be known as The B. F. Goodrich Rubber Co., Limited, with offices at 40 Wellington street, East, Toronto. The Goodrich organization was formerly an Ontario corporation only, but with increase of business the incorporation as a Dominion company was considered advisable.

Plans for the construction of a factory at Lachine, Quebec, are being prepared by the Lee Puncture Proof Tire Co. of Canada, Limited, Canada Cement Building, Montreal. At the new plant Lee puncture proof tires will be manufactured.

# The Rubber Trade in Europe

## Great Britain

ENGLAND has been watching closely the rubber situation in Malaya, where Chinese growers have been demanding the abolition of the Stevenson restriction measure, this being followed by the urgent requests of various anti-restrictionists that the government should at once appoint a committee to make an exhaustive examination into the operation of the entire scheme. Those, however, who are less "panicky" have been viewing conditions more hopefully. The editor of *Financial Times* says:

"In rubber producing circles a more optimistic feeling has lately been observable. The opinion is confidently expressed in some quarters that the worst has been seen and that from now on a steady recovery may be expected. There are, of course, others who express diametrically opposite views. But if there be anything in the contention that a market cannot remain depressed indefinitely in the face of increasing consumption and diminishing supplies, the evidence seems in favor of the optimists. In any case, the market in crude rubber has latterly exhibited more strength, and many consider that this is due to the practical certainty that from August 1 onward there will be a further scaling down of production under the Stevenson restriction scheme."

Others who are not anti-restrictionists believe, nevertheless, that certain inquiries as to the inner workings of the plantation industry are advisable, the well-known organization of Harrisons & Crosfield, Limited, concluding a communication to the *Financial Times* with these words from H. Eric Miller, as chairman:

"It is most desirable that the facts of the native rubber industry, particularly in the Dutch East Indies, should be ascertained. The Netherlands Indies authorities have this matter in hand, but if practical assistance can be rendered by Malaya with a view to speeding up the inquiry, no time should be lost by the Malayan Government in giving such assistance."

### Proposed Selling Agency

Meanwhile the whole producing industry is anxiously waiting for details as to the proposed central selling agency, upon which plan the London committee of the Rubber Growers' Association is still concentrating its energies. "Although the best brains in the industry have been called into council to devise the most satisfactory method of dealing with the selling question, they have doubtless many proposals to investigate and many conflicting interests to reconcile before they can draft a sufficiently comprehensive scheme that will satisfy the majority. In the meantime, the planters in Malaya have submitted some points which may be incorporated in the final draft, which will then have to be submitted for approval . . . . Indications point to the fact that it will take some time to thrash out all the problems that have to be considered, and we may not see any result for some months."

Those who have been thoughtfully considering the whole question are remarking upon the possibility of the forming of a great National Association, which will draw together the various important sections of the rubber manufacturing industry and unite them in one organization. Whether such a movement would be at once successful or not, there seems to be an evident tendency toward an amalgamation of interests which in all probability would place dealings with government and municipal authorities on a better and stronger basis and increase the prestige of the industry.

### Institution of the Rubber Industry

An informal dinner was held by members of the Institution of the Rubber Industry on June 24 at the Engineers' Club, London, in honor of O'Hara Hickson, ex-chairman of the Incorporated Society of Planters, who, with a number of his colleagues, had recently returned from Malaya. The chair was occupied by D. F. L. Zorn, whose short address was followed by a reply from O'Hara Hickson, who expressed his pleasure in again meeting some of his friends and associates in the industry. In his remarks Mr. Hickson particularly stressed a scheme for a provident fund for rubber planters, believing that the industry should make some provision for their retirement after years of usefulness. In conclusion he called upon the company to drink to Sir Henry Wickham's good health, and to thank him for his presence.

In replying, Sir Henry stated that he had been greatly interested in hearing of the work being accomplished in the Far East, and was also gratified that some rather belated provisions were being considered as an assistance to the planter. He believed that the provident fund scheme, perhaps with some modifications, should work very efficiently.

### Rubber Industry Holds Wembley Commemoration Dinner

On July 22 the various branches of the British rubber industry united in holding a Wembley Commemoration dinner at the Hotel Cecil, in London. The organizations represented included the Institution of the Rubber Industry, India Rubber Manufacturers' Association, Rubber Growers' Association, Rubber Trade Association of London, British Rubber Tire Manufacturers' Association, and the Cable Makers' Association.

The chairman on this occasion was Alexander Johnston, while the chief guest of honor was Sir Eric Geddes, of the Dunlop organization, who had recently returned from a visit to the United States. Other notable guests included the Right Honorable Lord Colwyn and Colonel Sir Ronald Ross.

### Birmingham Workers Oppose Repeal of McKenna Duties

On June 26 a large body of workers gathered at the Town Hall in Birmingham to protest against the decision of the government to repeal the McKenna duties. Gilbert C. Vyle, presiding, spoke of the stimulus to England's export trade resulting from the operation of these duties, the number of motor cars, for example, exported in June being the highest on record; the provisions for remunerative employment of skilled workers; and the improvement of the country's products.

Sir Henry Austin, M. P., proposed a resolution protesting against the action of the government, and pledging the meeting to use every legitimate means to secure the reimposition of the duties and also the reenactment of Part II of the Safeguarding of Industries Act. He said they had every justification in asking the government to take the duties off in a logical manner over a period of three years. L. Thompson, of the Dunlop Rubber Co., seconded the resolution, also stating as his belief that, in the interest of the rubber tire workers, from 10 to 15 per cent of whom were unemployed, the duties should be retained. He spoke, he said, as the representative of some 7,000 workers in the rubber tire industry of Birmingham. The resolution was carried by an overwhelming majority, only a dozen men voting against it.

### Fortieth Anniversary of India Rubber Journal

On August 2 the *India Rubber Journal* will commemorate its fortieth anniversary by publishing a special issue to which many leaders in the rubber industry will contribute. Among the many articles to appear will be one by Alexander Johnston, chairman of the India Rubber Manufacturers' Association, who will take as his

subject "Resources of the British Rubber Manufacturing Industry," stating his reasons for his confidence in its future. John Haworth, also of the India Rubber Manufacturers' Association, will relate its history in an article on "Organizing the Rubber Manufacturing Industry." These contributions are representative, for throughout this unusually large issue, which will contain from 250 to 300 pages of text and advertisements, there will be a marked absence of reckless statement and an evident spirit of cheerfulness and optimism. In an important stage of the rubber industry the various opinions expressed in this commemorative issue make it worthy of preservation.

## British Notes

On the occasion of the retirement from active service of C. Heath Clark, chairman of Harrisons & Crosfield, after forty-three years of service with that organization, a silver centerpiece was presented to him by the company, as an expression of affection and regard. H. Eric Miller succeeds Mr. Clark.

Buckleton & Co., Limited, is the new title of a well-known organization, which will carry on operations at 13 Rumford street, Liverpool.

A private concern with a nominal capital of £100,000 has been registered under the name of The Anglo-Dutch Utilities Co., with offices at 5-7 Eastcheap, London, E. C. The new organization, which will carry on business as rubber estate planters and owners, will also acquire some of the shares of certain rubber companies in Java and Batavia and other parts of the Netherlands East Indies.

Callender's Cable & Construction Co., Limited, recently held its twenty-eighth annual meeting, at which a very satisfactory condition of affairs was reported. The company is in the enviable situation of being able to boast a progressive improvement all through the war and since, its turnover in 1923 being the greatest in the company's history.

The Vulcan Co., one of the oldest of British motor manufacturers, is introducing a new 12 h. p. model, the first English maker to adopt balloon tires as standard equipment.

The Dunlop Co. announces that it will standardize a restricted range of semi-balloon tires for existing beaded-edge rims, of which the first size (31 by 4.4 inches to displace 30 by 3½ inches high pressure) is now ready for the British market. Other sizes are to be available in the near future.

## Germany

Conditions in the rubber industry are not particularly rose-colored at present, due to lack of capital and credit. The demand for goods is active enough, but buyers are unable to pay. Manufacturers are very careful owing to the poor collections and will make deliveries only against cash payments in advance or against payment on receipt of goods. World renowned firms are behind in their payments of bills for March. As a result, dealers are discouraged and goods in stock have been sold at low prices to provide funds for pressing obligations. Salaries are often in arrears, because employers have not the money to pay with.

The tire industry feels the effects of the general situation. The automobile business is passing through a critical period and this is reflected in tire sales. Trade in bicycle and motorcycle tires is more favorable, but payment on the installment plan has greatly increased. There is also a marked preference for cheap goods. At one dealer's, bicycle tubes were priced at one mark each!

### Rubber Novelties

Dealers offer lamp shades of gaily colored sheet rubber, about 60 centimeters large, decorated and fringed.

At a recent exhibition in Hamburg, it was shown that rubberized fabric could be used for keeping cheese fresh. Cheeses weighing up to 150 pounds each are no longer covered with parchment paper only, but with rubberized fabric.

Toy novelties of rubber are produced by The Sachsland Gummiwarenfabrik, Bürgel, Thüringen. Among the newest articles patented by this firm are a growing banana, inspired by the famous American song and introduced under the caption "Yes! we have bananas, and a duck that lays eggs!"

A new type of ball known as the "Ariadne" has appeared on the market. On the inside there are reinforcing ribs made by a simple folding process. A bent piece of sheet metal gives the round contour to the ball. When the ball is finished there are no traces left of the folds on the outside. This method is suitable for the larger and more expensive balls, for tennis balls and the like.

### German Company Reports

The Frankfurter Asbestwerkt A.-G. (vormals Louis Wertheim), Frankfurt-am-Main-Niederrad, reports a loss of 26,074,416,010,667,855 marks for the year 1923. No dividend will be declared.

In spite of the critical conditions prevailing during the year 1923, the Asbest-und Gummiwerke Alfred Calmon A.-G., Hamburg, is able to show a net profit of 52,057,481,105,370,216 marks for the year's working. This company recently increased its capital by 100,000,000 marks.

Tightness of money, caused by the abnormal rate of the mark, brought much hardship in its wake and the Harburger Gummiwaren Fabrik Phoenix A.-G., was also affected. In addition, the company suffered because of the Ruhr occupation as it was unable to supply customers in this territory regularly, while on the other hand it could only obtain small quantities of certain materials which for years had been bought there. The company had to introduce a part-time schedule in some of the factories, but in spite of all the adverse conditions business was on the whole active. Indeed at times the firm was unable to cope with the number of orders received.

During the year the capital was twice increased, once to 165,000,000 marks and again to 330,000,000 marks. This was necessitated by the inflation and also by costs for extending the works. The net profit for the year was 214,389,793,434,728,000 marks.

In the report of the New York Hamburger Gummiwaren Compagnie we come across the remark that, owing to inflation, the details of the profit and loss account do not give a proper view of the course of the business year nor of the financial situation of the concern. During 1923 profits amounted to 739,935,624,796,719,041.84 marks and a dividend of 4 per cent plus 15 gold marks per share of 3,000 marks was declared.

## Austria

The Semperit Oestereichisch-Amerikanische Gummiwerke A.-G., has decided to increase its capital to 1,600,000,000 kronen. In May, 1923, the capital had been raised to 1,000,000,000 kronen from 500,000,000 kronen. The new increase was required for a permanent interest in the well-known firm Josef Reithoffer's Söhne and for the purpose of strengthening the funds for working the Semperit factories. The Semperit reports a profit of 10,488,422,450.94 kronen for 1923, and will distribute 8,000,000,000 in dividends at the rate of 8,000 kronen per share.

## Holland

Amsterdam appears to be losing its importance as an international market for crude rubber as both imports and exports have declined in the last few years. In 1923 only 457,900 kilos of rubber were offered at auction, against 2,228,000 kilos in 1922. This is due to the diminished requirements of the local factories, which are at present in a bad way.

The most important rubber factory is the N. V. Vereenigde Nederlandsche Rubberfabrieken at Heveadorp near Arnhem, founded in 1916 with an authorized capital of 10,000,000 guilders. The concern has branches at seven important cities in Holland and at Basle, besides six local agencies and two in Great Britain, and

a spinning mill at Bocholt (Germany). The output includes all kinds of tires (Hevea brand), rubber shoes, heels, soles and rubber flooring. At present the personnel numbers 450, although as many as 1,000 have been employed, while the daily output has at times been about 5,000 cycle casings, 500 automobile casings, and as many inner tubes of both kinds.

The factory next in importance is the N. V. Rubberfabriek Vredestein at Loosduinen, near the Hague, founded in 1908 with authorized capital of 2,000,000 guilders. The products are tires ("Vredestein" brand) and technical rubber goods. The factory gives employment to 200 men and the daily capacity is about 4,500 cycle tires, 3,000 inner tubes, 125 automobile tires and 25 solid tires.

Holland offers a steadily increasing market to tires. During 1923 she imported 81,726 automobile tires against 49,273 in 1922. In 1923 France supplied 28,840, America 17,396, England 14,863, and Germany 11,420. Imports of tubes were 73,653 in 1923 and 39,492 in 1922. Almost half, 31,055, came from France; America sent 15,601 and England 13,095. England, France and America shipped most of the motorcycle tires, which numbered 12,847 in 1922 and 15,154 in 1923; motorcycle tubes amounted to 12,548 in 1922 and 23,048 in 1923.

## Latvia

Before the war, Latvia had a flourishing rubber industry that increased from year to year. Riga was the center and the chief factory was the Prowodnik which at that time gave employment to thousands. Now the buildings of the works are half ruined and deserted. Once the war was over, certain companies began all over again in a very small way. Thus in 1921 two small enterprises began work again in Riga, the Wairogs and the Waronis, of which the former employed two persons and the latter five. Today the Wairogs has 20 employes and last year sold goods to a value of 4,000,000 Latvian rubles. The Waronis is considerably larger and employs 170 persons at present, but is reported to be planning to increase the number to 500. The firm produces chiefly galoshes, technical rubber goods, rain coats. It exports to Lithuania, Poland, Switzerland and Brazil, and last year did a business amounting to 24,000,000 Latvian rubles.

The third factory is the Riga Rubber Factory, Continent, which has recently started with up-to-date equipment and gives work to 200 persons. A fourth rubber company, the Baltic India-Rubber Company Quadrat, will begin operations shortly. The capital is said to be 750,000 gold francs, most of which is Dutch. It seems that former shareholders of the Treugolnik also have an interest in the firm. From all accounts the new factory will furnish employment to a few hundred persons.

## Italy

During the first quarter of 1924, Italy's imports of rubber and rubber goods exceeded her exports, the figures being: 44,672,407 lire against 41,692,233 lire. In the first quarters of 1923 and 1922, the figures were: imports, 27,640,176 lire; exports, 45,543,791 lire; and imports, 23,372,868 lire; exports, 30,237,698 lire. The 1924 difference was chiefly due to greatly increased quantities of raw materials, of which rubber accounted for 2,551.4 metric tons, value 28,731,919 lire, against 1,666.7 metric tons, value 13,854,356 lire, and 1,426.8 metric tons, value 11,966,036 lire, during the first quarters of 1923 and 1922 respectively; and gutta percha: 76.3 metric tons, value 2,971,540 lire as compared with 11.7 metric tons, value 318,330 lire and 13.7 metric tons, value 85,300 lire, respectively, in the corresponding periods of the two preceding years.

There was also an increase in the quantity of tires and tubes imported in 1924, but a drop in the value as compared with former years, thus: 327 metric tons, value 6,960,953 in 1924; 283.5 metric tons, value 7,741,476 lire in 1923; and 226.3 metric tons, value 8,002,432 lire in 1922. Imports of solid tires, including rims, amounted to 91.1 metric tons during the period under review.

The rest of the 1924 imports included: rubber thread, 7.3 metric tons; rubber belting, 16.7; hose, 11.9; packing, etc., 6.3; scrap rubber, 75.1; waterproofed fabrics, 39.1 metric tons, value 1,255,240 lire, and hard rubber goods, 1.7 metric tons. Most of the tires came from France and England, while Germany, Austria, and France sent almost 90 per cent of the miscellaneous goods.

Pneumatic tires and tubes form Italy's principal exports and in 1924 amounted to 32,868,435 lire out of total exports of 41,692,233 lire. In the past two years the amounts were: 1923, 31,593,131 lire out of 45,543,791, and in 1922, 24,456,036 lire out of 30,237,698 lire.

The quantities as given officially were 679.6 metric tons in 1922, 1,233.2 metric tons in 1923 and 1,308.6 metric tons in 1924. The value of the 1924 solid tire exports was 3,438,783 lire instead of 6,047,492 lire during the first quarter of 1923.

The National Congress of Industrial Chemistry was inaugurated on April 15, 1924, at Milan and lasted till April 18, 1924. Among the papers communicated was one on the reactions of syntheses of benzotiazol and of its derivatives, by G. Bruni and T. G. Levi.

### TRACTOR FOR BRAZILIAN RUBBER

The firm of B. Levy & Co., of Manaos, Brazil, has just bought for experiment an American tractor to be used in hauling rubber along the Jacy-Parana river in the State of Matto Grosso. If it proves satisfactory, the firm will buy several more. This is the first tractor to be used for such a purpose in Brazil.

### SPECIAL RECLAIM FOR MOLDED GOODS

A new reclaimed rubber, designated as Monatiquot 700, possesses the outstanding features of ready milling and color. These combined with its low volume cost give it a strong appeal to the interest of the rubber manufacturer producing black or colored molded goods. Like all grades of reclaim from the same mill it is carefully refined, with tailings cut off, and is shipped in roll form. This insures cleanliness and minimum surface exposure to moisture, grit and other foreign matter.

### ARGENTINA MARKET FOR AUTOMOBILE ACCESSORIES

In 1923, according to Commerce Reports, the United States exported to Argentina parts and accessories valued at $6,198,477. There are now in Argentina about 100,000 automobiles in service, the average importation being 3,000 new cars a month. Of this number the United States supplies about 97 per cent.

### AMERICAN SCIENTIST HONORED

Dr. Leo H. Baekeland, president of the American Chemical Society and honorary professor of chemical engineering in Columbia University, has been made Commander of the Order of Leopold by King Albert of Belgium. Earlier distinctions conferred upon Dr. Baekeland, who is also president of the General Bakelite Co., are the crosses of an officer of the Legion of Honor of France and of an officer of the Order of the Crown of Belgium.

### MODIFIED LAWS TO ENCOURAGE PHILIPPINE RUBBER INDUSTRY

In a recent message to the Philippine Legislature, Governor General Leonard Wood recommended such modification of the laws governing the leasing of the public domain as will encourage the cultivation of rubber and other products to which the islands are adapted.

ACCORDING TO THE "DÉPÊCHE COLONIALE" OF MARCH 20, 1924, the rubber exports of French West Africa amounted to 1338 tons in 1923 against 324 tons in 1922.

# The Rubber Trade in the Far East

## Malaya

THE STEADY drop in the price of rubber is causing something of a panic among producers, who are once more fully occupied in blaming the government, decrying restriction and offering new schemes for the salvation of the industry.

It is not so long ago that grateful planters presented Mr. Still of the *Straits Times* with the sum of $10,000 (Straits currency) as a reward for his efforts to get restriction enforced. Now the cry is for the abolition of restriction, which is sending the Malayan rubber industry to an unnatural death.

The Penang Chinese Chamber of Commerce has decided to recommend that rubber restriction be abolished if the Dutch refuse to come in.

Individuals want to know what the government is going to do about the matter, whether it has investigated why rubber is going down despite restriction, and whether it is not time the government considered the advisability of taking a hand in the matter of helping a central selling agency to get launched.

Rubber planting associations are busying themselves about the matter and the Central Perak Planting Association will hold a series of public meetings at which a number of points in connection with the rubber situation will be discussed.

### Central Selling Agency

The Rubber Growers' Association's proposal for a central selling agency is the subject of much discussion here, although details of the plan are still lacking. People here are grasping at the idea as the proverbial drowning man grasps at a straw. Their attitude is that any scheme is good, if it saves the industry. As a matter of fact no scheme, however good it may be, has a chance of succeeding unless it is properly supported.

The Johore Rubber Planters' Association recently discussed the selling agency scheme and unanimously approved of the principle. It was pointed out that the small holders, of which there are a large number in Malaya, would probably not join in the plan and as they would sell at any price the work of the agency would be neutralized.

The Negri Sembilan Planters' Association dealt with the matter at a recent meeting when it was pointed out that for a selling agency to succeed it must have the support of at least three-fourths of the producers. To obtain this support liberal inducements must be offered besides the assurance given that producers will not be exploited. The agency must pay commission to dealers on all sales of independent growers made by them at scale prices settled through the agency. This is necessary in order to prevent dealers from working against the agency.

Members on their side will bind themselves to accept the agency's control for a definite term and will pay an agreed commission on rubber sold. A resolution that the meeting would support the scheme of the Rubber Growers' Association provided it contained what was set out in the proposals was put to the meeting and unanimously carried.

Before these proposals were submitted to the meeting H. W. F. King read a paper in which he developed a suggestion of his own. He stated that the Dutch East Indies would not be likely to join in the selling control as American interests were so great in the Dutch colonies that they would prevent it. The proposal was that estates should combine with British manufacturers, supplying rubber at cost price, the rubber to be allowed to leave the country duty free and the profit on manufactured articles to be distributed pro rata. The factories should be extended on capital raised by estates putting up so much per acre planted plus private subscription if necessary. New factories should be built in Australia, South Africa, Hongkong, India and Malaya, with the idea of saving undue expense in distributing the finished article.

### Rubber Oil from Scrap

The manager of Pinji Estate, Lahat, R. W. Kendall and the well-known Ipoh chemist, D. Graham, have invented an apparatus for distilling oil from scrap rubber. In a bricked-up furnace is placed a receptacle containing scrap. This receptacle resembles an ordinary retort having a flange at the top into which is inserted a charging tube, and inside this is a cup with a hole that opens into the retainer below. Round the cup is water which serves to keep the gas in. A pipe is attached to the top which runs into a condenser in a water tank, and another pipe at the bottom of the tank connects with a receptacle that receives the oil, which is dark in color and has an acrid smell.

Experiments show that the oil will kill maggots in latrines and when sprayed in swamps it destroyed all mosquitoes. Redistilled, it successfully drove a petrol engine. The oil has further been used to produce a cement in the construction of rubber roadways. It is considered possible that valuable drugs may be obtained from the oil extraction.

### Packing in Canvas Bags

Regarding the merits of canvas bags for packing rubber, the cost of a canvas bag is $6.50 and of a Momi case $1.20. The former can be used over and over again while the latter is only good for one trip, so that the cost of a canvas bag is considerably less than for Momi cases. The bags will hold more rubber and so a saving is effected in the freight. Comparing Momi and Venesta cases, it was shown that the latter were superior in many respects. More rubber can be packed in a Venesta case, the charge for opening is half what it is for Momis, and they stand wear and tear better than Momis.

### Restriction Statistics

The following statistics for the period November 1, 1923, to April 30, 1924, have been sent out by the Controller of Rubber Exports, Kuala Lumpur.

EXPORTS AND IMPORTS

| | Total Exports British Malaya | Total Exports Restrictions Area | Total Imports Foreign Rubber |
|---|---|---|---|
| November, 1923 | 17,543 | 15,012 | 7,442 |
| December, 1923 | 25,501 | 16,133 | 7,564 |
| January, 1924 | 23,848 | 14,729 | 8,867 |
| February, 1924 | 19,395 | 14,332 | 7,440 |
| March, 1924 | 22,294 | 14,020 | 8,269 |
| April, 1924 | 20,551 | 10,759 | 7,909 |
| Totals | 130,132 | 84,995 | 47,491 |

DEALERS' STOCKS

| | 1923 | | 1924 | | | |
|---|---|---|---|---|---|---|
| | November | December | January | February | March | April |
| Singapore | 20,534 | 20,235 | 20,989 | 20,962 | 18,950 | 16,954 |
| Penang | 3,219 | 3,114 | 3,406 | 2,777 | 2,538 | 2,121 |
| Totals | 23,753 | 23,349 | 24,395 | 23,739 | 21,488 | 19,075 |

DUTY RUBBER

Rubber from restriction area on which export duty was paid during December, 1923, January-April, 1924.

| | 1923 | 1924 | | | |
|---|---|---|---|---|---|
| | December | January | February | March | April |
| Federated Malay States | 9,675 | 9,433 | 8,361 | 8,589 | 5,869 |
| Straits Settlements | 1,873 | 1,500 | 2,029 | 1,718 | 1,324 |
| Johore | 2,944 | 2,395 | 2,265 | 2,514 | 2,531 |
| Kedah | 1,292 | 942 | 1,291 | 880 | 697 |
| Kelantan | 300 | 237 | 320 | 265 | 276 |
| Trengganu | 49 | 222 | 66 | 54 | 62 |
| Total tons | 16,133 | 14,729 | 14,332 | 14,020 | 10,759 |

Stock afloat in Harbor (April rubber declared in May), 239 tons.

All above figures are in tons.

## Netherlands East Indies

As the British are anxious to get the Dutch to join their scheme for a central selling agency, the opinions on the subject are of interest. J. N. Burger, that staunch advocate of the theory of the survival of the fittest, points out that a previous attempt by the British to organize a selling agency failed, and the new effort in the same direction will revive the battle between the opposing parties.

The idea of the British to organize an agency to dictate prices to what they consider as a small group of buyers that now regulate prices to suit themselves, is characterized as naïve. Mr. Burger also points out that an agency such as that proposed would bring with it an army of officials, incredible expenditures, salaries, bonuses, etc., all of which the producer would have to pay and which would rebound on the shareholder.

The attempt, via the front door, to get the Dutch to join restriction failed; now the back door is being tried, for a selling agency means regulation of production, which entails restriction of production, and that again amounts to loss of freedom. Mr. Burger is evidently against the selling agency, and this being the case it seems probable that he will persuade other Dutch directors to take his view of the situation, so that very likely the Dutch will keep aloof again.

To be sure there are opinions in favor of the selling agency, for certainly there are a number of planters here who are very much worried over the drop in prices and would like to cooperate with the British, in any scheme that promises to send up prices. There are many people who fear that if the conditions of 1921-1922 should be repeated there would be a great shake-out as people are exhausted and have not much to look forward to. But although nothing is known about the details of the scheme, it has already been pointed out that a body that did nothing but fix the price would not do much good especially in the case of weak holders in the face of an inactive market. It is also suggested that only a certain standard quality should be considered in such a scheme as otherwise endless squabbles would be the result.

## Native Rubber and Taxes

Never in the history of rubber cultivation has the native holder received so much attention as is the case at present. The realization that the native produces large quantities of rubber which are able to affect the market trend, has focussed all eyes on him, and his methods and earnings are the subject of much discussion. It is a thorn in the flesh of European producers that while they have to pay all sorts of taxes and have to comply with innumerable laws the native escapes them all. It is said, to illustrate the easy time the native has of it, that he sticks a seed into the ground, lies down to sleep beside it until it has grown into a tree and then taps it. If all reports are to be believed, tappers on native estates have been earning 70 to 100 guilders a month and are carted to and from work in Ford cars. Even school teachers are leaving their schools for the more remunerative work in the rubber fields.

The worst of all this is that the government gets no more out of the natives than it did when they were less prosperous. People compare the easy conditions of native producers in Sumatra with those in Malaya. In the latter colony, natives are subject to the same rulings as the Europeans, all their holdings are registered and the government has a fair idea of the possible output of native holdings. In Sumatra there is no registration and no one knows how much land the natives have planted to rubber nor what they are likely to produce.

There is now a demand that the native be properly taxed and that registration be instituted. Much talk of taxing is heard, but what will come of it is not known. It seems that the Dutch have great difficulty in collecting any kind of tax from their Asiatic subjects and that the revenue from this source is but a fraction of what it ought to be.

This question of inequality in the matter of taxation is not the only grievance against the native. In sections where native holdings preponderate and European estates are scattered an unbelievable amount of stealing of rubber from the latter goes on. There seems to be very little that can be done against this as both the coolies working on European plantations and the native police who are supposed to suppress crime are bribed by the instigators of this thievery. That the native police are easy to bribe will be readily understood when it is known that their salary is 15 whole guilders a month (the equivalent of $6)!

Besides theft, the natives are accused of neglecting their plantings, so that if disease gets a firm footing there an epidemic may be caused involving adjacent European plantations. In Malaya, native estates are regularly inspected and disease must be treated. There is no such inspection here.

It is easy to understand the feelings of the European planter toward his native colleague and toward the government when he compares his skillful, scientific and careful work with the slovenly, lazy methods of the native and realizes what harm the unchecked, growing production of the latter is doing him.

## Selective Planting

The experiment stations are steadily working on the problem of increasing yields and the task of studying bud-grafting and seed selection continues with unabated energy. Every once and awhile reports on these experiments are published.

A lecture by Dr. A. Steinmann on results obtained after one year of tapping bud-grafts has recently appeared in print. On the whole the conclusions do not differ from those expressed by other investigators. In the course of this lecture the scientist called attention to a most interesting experiment that is going on now at the experiment garden Tjiomas, of the West Java Rubber Experiment Station. There are buddings from 17 different mother trees on plantations in different parts of the Dutch Indies. The productions from some of the mother trees are extraordinarily high; thus four trees in the Preanger, Java, yielded an average of 35 to 40 grams of dry rubber per tapping, over a period of 5 years. A tree in the Lampongs, Sumatra, gave 60 grams dry rubber per tapping, for 3 years. A tree in Borneo, tapped every other day over half the circumference gave 300 grams per tapping. Two trees in Batavia also each yielded 300 grams per tapping, but they were tapped once in three days. Not all the trees are planted in good soil; for instance, one other tree in the Preanger is stated to be on poor soil, but nevertheless yields 65 grams per day with two cuts over ¼ of the circumference.

It has been possible to test some of these mother trees by comparing their yields with those of the budded trees obtained from them, and results are soon to be published. Other bud-grafts have not yet reached the tapping stage.

## Dr. deVries on Uniformity

Another subject that is engaging the attention of scientists is the method of collecting and preparing rubber in Java. It is desired that Java shall produce an article that will be as uniform as possible. With this end in view inquiries among planters in the various districts have been instituted from time to time, samples have been asked for and have been carefully analyzed and examined. Quite recently the results of such inquiries in Malang became available. From these it appeared that while the methods of preparation still differed considerably, the inner qualities varied less. Dr. O. de Vries is especially interested in this effort to make Java rubber uniform. For the last few years he has been trying to drive home the importance of uniformity; he has told his hearers again and again that the rubber factories required a rubber whose uniformity could be relied on and that they required very little pretty or high grade rubber.

## Exports of Latex

The exports of latex from East Coast of Sumatra amounted to 10,581 tons during 1923, while for the first quarter of 1924 only 121 tons were shipped abroad.

# Recent Patents Relating to Rubber

## The United States

### Issued* June 10, 1924

NO. 1,496,905 Shoe heel with revoluble tread. H. J. P. Kottger, New York, N. Y.

1,497,000 Catamenial pad holder. S. Rosenberg, Los Angeles, California.

1,497,130 Tire repair patch. R. J. Bell, assignor to Virginia-Carolina Rubber Co., both of Richmond, Virginia.

1,497,131 Tire patch. P. Crosley, Jr., Cincinnati, Ohio, assignor to Virginia-Carolina Rubber Co., Richmond, Virginia.

1,497,155 Armored tire. G. Pagella, St. Louis, Missouri.

1,497,219 Rubber cushioning and pressure absorbing device for an artificial limb socket. P. A. Martino, assignor to United Limb & Brace Co., Inc., both in Boston, Massachusetts.

1,497,264 Hard rubber nozzle for a spray syringe. I. O. Gurnee, Butler, New Jersey, and A. A. Smith, New Haven, Connecticut, assignors to Superior Hard Rubber Co., Butler, New Jersey.

1,497,297 Patch clamp for tires, etc., G. Lehr, Brooklyn, New York.

1,497,404 Resilient wheel with rubber studs. H. M. Patch, assignor to Ellis Resilient Wheel Corp., both of Seattle, Washington.

1,497,452 Sanitary napkin protector and apron. S. C. Lefkovits, Brooklyn, New York.

1,497,531 Battery box molded from compound containing comminuted rubber. J. M. Ahlgren, Indianapolis, Indiana, assignor to Ahlbell Battery Container Corp., Chicago, Illinois.

1,497,584 Pneumatic tire with a partition at the medial plane. F. Petey, Rhinelander, Wisconsin.

1,497,598 Arch support. E. Seavey, Ridgefield Park, New Jersey, assignor to C-V Products Corporation, a corporation of New York.

### Issued* June 17, 1924

1,497,756 Sanitary apron or shield. L. J. Jones, Pelham Manor, New York.

1,497,933 Squeegee for floors. J. M. Oberti, San Francisco, California.

1,497,999 Insulated surgical irrigation unit. F. B. Truax, Lincoln, Nebraska.

1,498,051 Felt and fabric tire. W. E. McCune, assignor by direct and mesne assignments of one-half to R. P. Congdon, both of Los Angeles, California.

1,498,055 Syringe. J. R. Martin, Sioux City, Iowa, and E. F. Lane, Washington, D. C.

1,498,092 Swimming attachment for bathing suits. M. Green, Seattle, Washington.

1,498,143 Self-healing tire tube. H. H. Allyn, Philadelphia, Pennsylvania.

1,498,175 Tire valve. H. P. Kraft, Ridgewood, New Jersey, and M. C. Schweinert, New York, N. Y.

1,498,201 Header channel liner. George C. Reeves and Dudley M. Todd, assignors to Dryden Rubber Co., all of Chicago, Illinois.

1,498,280 Inflatable toy musical instrument. A. Izold, Camp Meade, Maryland.

1,498,302 Shaving brush holder with rubber sleeve. S. Sataka, Sacramento, California.

1,498,336 Tire with spaced lugs and road-engaging elevations. J. H. Wright, assignor to The Racine Auto Tire Co., both of Racine, Wisconsin.

1,498,518 Tire retaining rim. Burgess Darrow, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

### Issued* June 24, 1924

1,498,683 Device for closing rim-cut incisions in a tire. A. B. Davis, Smithfield, Virginia.

1,498,727 Removable ear-cushion for telephones. F. Haskel, Detroit, Michigan.

1,498,854 Demountable rim. A. G. Painter, assignor of one-half to H. C. Peters, both of Seattle, Washington.

1,498,970 Cushion tire. F. C. Kaufman, New York, N. Y.

1,498,975 Air tube for tires. T. B. McLeroth, London, England.

1,499,166 Sponge rubber chair pad. G. S. Frazier, Sebring, Ohio.

1,499,167 Waterproof boot. A. Frisch, Winthrop, Massachusetts.

1,499,238 Rubber heel. J. Malcher, Chicago, Illinois.

1,499,246 Protective device for tire valves. G. W. Oakes, Crystal City, Missouri.

1,499,247 Combined dust and air cap for valve stems. G. W. Oakes, Crystal City, Missouri.

1,499,248 Valve for tires, etc. R. G. Old and F. W. Hill, both of Folkestone, England.

1,499,265 Rubber reducing corset. L. M. Ullman and D. A. Lederer, both of New Haven, Connecticut.

1,499,276 Tire tread. O. H. Williams, assignor to The Lancaster Tire & Rubber Co., both of Columbus, Ohio.

*Under Rule No. 167 of the United States Patent office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

### Issued* July 1, 1924

15,868 (Reissue) Hose supporter. C. J. Hazelton, assignor to American Narrow Fabrics Co., both of Worcester, Massachusetts.

1,499,327 Pressure gage for tires. A. Badowski, assignor by mesne assignments to Tiregage Valve Corp., both of Charleston, West Virginia.

1,499,328 Pressure gage for tires. A. Badowski, assignor my mesne assignments to Tiregage Valve Corp., both of Charleston, West Virginia.

1,499,392 Pneumatic tire. J. L. Melton, Portsmouth, Virginia.

1,499,497 Pressure gage for tires. A. Badowski, assignor to Tirometer Valve Corp. of America, both in Charleston, West Virginia.

1,499,539 Noise-making toy with elastic members. E. E. Landon, Washington, D. C.

1,499,564 Rubber reducing garment. L. L. Ullman and D. A. Lederer, both of New Haven, Connecticut.

1,499,785 Leather and rubber sheet material. M. Regula, New York, N. Y.

1,499,805 Elastic bandage. H. B. Chatterton, West Somerville, Massachusetts.

1,499,857 Barber's neck apron with elastic band. W. J. David, Farwell, Nebraska.

1,500,047 Inflatable toy. S. C. Bias, Harrisburg, Pennsylvania.

### Issued* July 8, 1924

1,500,107 Dental appliance for cleansing the mouth. J. Chandler, Toledo, Ohio.

1,500,274 Window cleaner. N. D. Scarling, Richmond, Virginia.

1,500,307 Sectional cushion tire. A. A. Glidden, assignor to Hood Rubber Co., both of Watertown, Massachusetts.

1,500,353 Separator comprising porous strips with rubber binding agent. T. A. Willard, Cleveland Heights, Ohio.

1,500,472 Tire wrapping. J. Scherner, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,500,474 Elastic corset stay. R. Tove, South Norwalk, Connecticut.

1,500,665 Inflatable life preserver. A. Blankenhagen, assignor to A. E. Bauman, both of Akron, Ohio.

1,500,819 Rubber heel. J. J. Johnson, San Francisco, and G. E. Johnson, Fowler, California.

1,500,823 Life-saving device. R. J. Kee, Ottawa, Ontario, Canada.

## The Dominion of Canada

### Granted June 10, 1924

240,774 Tire valve. The Tiregage Valve Corporation, assignee of C. S. Munro, both of Charleston, West Virginia, U. S. A.

### Granted June 17, 1924

240,798 Solid or semi-solid tire. J. H. Blackburn, Preston, Lancaster, England.

240,890 Recorder for the temperature of rotating bodies. The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, Canada, assignee of A. W. Keen, New York, N. Y., U. S. A.

240,938 Tire bead. J. R. Gammeter, Akron, Ohio, assignee of R. C. Pierce, Belleville, New Jersey, both in U. S. A.

### Granted June 24, 1924

240,981 Water bag shaped to fit over the abdomen. H. C. Carter, Detroit, Michigan.

240,983 Rubber heel tread. W. H. Chenery, Montreal, Quebec, Canada.

241,021 Inflatable life-preserver. A. Kolberg, Sheboygan, Wisconsin.

241,086 Hose fitting. The Hydraulic Brake Co., Los Angeles, California, assignee of Malcolm Loughed, Detroit, Michigan, both in U. S. A.

241,088 Hose fitting. The Hydraulic Brake Co., Los Angeles, California, assignee of M. Loughed, Detroit, Michigan.

241,089 Hose and fitting. The Hydraulic Brake Co., Los Angeles, California, assignee of M. Loughed, Detroit, Michigan.

### Granted July 1, 1924

241,229 Suspenders with rubber spring. A. M. Zeigler, Newton, Massachusetts.

241,272 Corset with elastic sections. The Kops Brothers, Ltd., of Canada, Toronto, Ontario, assignee of W. Kops and Max Kops, executors, of New York, N. Y., U. S. A.

241,273 Corset with elastic sections. The Kops Brothers, Ltd., of Canada, assignee of W. Kops and Max Kops, executors, of New York, N. Y.

### Granted July 8, 1924

241,371 Rubber heel. W. F. Dohemann, San Francisco, California, U. S. A.

241,430 Fabric and rubber tire. H. N. Wayne, Santa Monica, California, U. S. A.

241,475 Corset with elastic inserts. Kops Brothers, Ltd., of Canada, assignee of W. Kops and M. Kops, executors, New York, N. Y., U. S. A.

**Chemical Patents will be found on pages 729-730, Machinery and Process Patents on pages 734-736**

## The United Kingdom

### Published June 4, 1924

213,901 Vehicle window employing a rubber strip and rubber stops. G. Tillie, assignor to Million-Guiet, 28 Rue Greffulhe, Levallois-Perret, Seine, France.

213,971 Cushion tire. S. Hill-Wood, 11 Great Stanhope street, London.

214,039 Tire cover made in two separate parts. A. A. A. Darche, 5 Rue Michelet, Algiers.

214,047 Brassiere with rubber breast pads. G. E. Lucksted, 84 Sinclair Road, London.

214,105 Countersunk rubber tips for boots and shoes. W. E. Wood, and J. E. Payne, 61 Lionel street, Birmingham.

214,140 Adjustable rubber sole pad. A. A. Crozier, 75 Lansdowne Road, West Didsbury, Manchester.

214,166 Air-tube tire. St. Helens Cable & Rubber Co., Ltd., and J. H. C. Brooking, Slough, Buckinghamshire.

### Published June 12, 1924

214,319 Sectional inner tube. F. Ambrosini, 76 Viale Monza, and I. Regondi, 3 Piazza Paolo Ferrari, both in Milan, Italy.

214,368 Crêpe rubber tennis balls. G. A. Marsh, 23 Doris Road, Sparkhill, and G. W. Richards, 25 Waldrons Moor, Kings Heath, both in Birmingham.

214,380 Means for securing a valve stem to an air tube or other inflated article. F. L. Rapson, Ottershaw Park, Chertsey, Surrey.

214,425 Golf ball mold. P. A. Martin, 31 Westfield Road, Edgbaston, and J. Stanley, 70 Ivor Road, Sparkhill, both in Birmingham.

214,443 Flexible mudguard. J. W. Curtiss, 12 Windsor Road, Clayton Bridge, and T. A. Tomlinson, 34 Herbert street, Blackley, both in Manchester.

214,491 Golf bag with rubber-covered split metal ring for separating wooden and iron clubs. T. L. Jones, 192 Harrow Road, Paddington, London.

214,535 Driving pulley comprised of alternate layers of rubber and wood. H. N. Atwood, East Hill Road, Monson, Massachusetts, U. S. A.

214,543 Arch supporting insole with resilient pad. A. Lee, Enterprise Factory, Kingsthorpe, Northampton.

214,546 Rubber vehicle lamp and bracket. W. F. M. Rose, 19 Stamford Brook Mansions, Goldhawk Road, Hammersmith, London.

214,548 Rubber valve for collapsible tubes. W. D. Verschoyle, Tanrago, Ballysodare, Ireland.

### Published June 18, 1924

214,701 Rubber soles, mats, handles, brushes, etc. M. M. Dessau, 14 Mincing Lane, London.

214,719 Elastic fasteners for boots and shoes. S. Cookson, 158 King William street, Amblecote near Stourbridge, Worcestershire.

214,745 Disk-type universal joint. A. Franklin and Self-Sealing Rubber Co., Ltd., Hermetic Works, Ryland street, Birmingham.

214,809 Hose. E. Schulthess, 26 Courtland street, New York, N. Y.

214,841 Sole with crêpe rubber base. R. H. Sibley, 44 Harlestone Road, Northampton.

### Published June 25, 1924

214,980 Garment hanger with elastic sleeves. F. M. Rauch and W. J. Brooks, both of Washington, D. C., U. S. A.

215,076 Leather and sponge rubber inner sole. C. J. Dolphin, 14 Alexandra street, Southend-on-Sea.

215,159 Tire pressure gage. H. Brier, 1 Mishkin Road, Dartford, Kent.

215,228 Compression inner tube. G. R. Colby, 361 East Burnside street, Portland, Oregon, U. S. A.

215,272 Rubber buffers for self-closing gate. G. A. Hawken, Maunu, Whangarei, Auckland, New Zealand.

### Published July 2, 1924

215,344 Tire pressure gage. W. Trewhella, Trentham, Victoria, Australia.

215,418 Rubber springs for vehicle bodies. H. S. Skenfield, 57 Fishponds Road. H. J. Webber, 13 Harrow Road, and S. E. Smith, Clare Street House, all in Bristol.

215,453 Sponge rubber exercising apparatus. G. Campbell, 24 Ovington Gardens, London.

215,477 Tire pressure gage. Dunlop Rubber Co., Ltd., 1 Albany street, Regent's Park, London, and C. Macbeth and A. Kay, Fort Dunlop, Erdington, Birmingham.

215,485 Tire valve. W. O. S. Greener, Lower Batson, Salcombe, South Devon, and J. C. Tibbetts, Globe Works, Forster street, Walsall, Staffordshire.

215,510 Stuffing boxes with rubber-proofed canvas-covered core. H. D. Bailey, 71 Barrowgate Road, Chiswick, London.

215,513 Padded cell formed with inflatable bags. H. Morley, Pinewood, Broad Road, Sale, near Manchester.

215,526 Heel protector for boots and shoes. R. Gwynn, 98 High street, and D. Gealy, Cash Stores, both in Tumble, Llanelly.

215,541 Shaving brush and rubber massage device. H. D. Sterrick, 10 Diamond square, Pittsburgh, Pennsylvania.

215,610 Sole of vulcanized and crêpe rubber. O. W. H. Briggs, St. Mary's Road, Market Harborough, Leicestershire.

215,662 Inner tube reinforced by bands of fabric and of rubber. G. F. Mohlman, 9909 83rd avenue, Edmonton, Alberta, Canada.

215,674 Protective device for the use of a diver's attendant. C. E. Heinke & Co., Ltd., 87 Grange Road, Bermondsey, London.

## New Zealand

### Published June 12, 1924

50,692 Cushion tire. W. A. Browne, C. W. Popp, and G. Kiernan, all of Auckland.

50,730 Pneumatic horse collar. J. A. Neely, of "The Agencies," Queen street, Waimate, and R. P. Henry, of Tawai, Glenavy, near Waimate.

51,577 Rubber horseshoe Tetsunosin Kohri, 5 Okukoji, Fukuoka, Japan.

## Germany

### Patents Issued, With Dates of Issue

397,087 (October 19, 1922). Waterproof fabric for making apparel, and method of making it. Eugen Nitzsche, Boxgraben 36, Aachen.

397,103 (October 19, 1922). Medical syringe. Adolph Pochwadt, Hauptstrasse 17, Berlin, Schöneberg.

397,186 (July 3, 1920)). Elastic tire. Cadet Noel, Levallois-Perret, France; represented by: F. Schwenterley, Berlin S. W. 11.

397,506 (June 12, 1923). Rubber tread patch with metal insert. Carl Schneider, Adalbertstrasse 52, Frankfurt-am-Main.

397,507 (August 19, 1923). Rubber tread patch with metal insert. Carl Schneider, Adalbertstrasse 52, Frankfurt-am-Main.

397,954 (July 16, 1922). Suction inhaler. Franz Tremml, Vienna; represented by: M. Löser and O. H. Knoop, Dresden.

398,568 (October 11, 1923). Protective sole nail with rubber top. Carl Stiehl, Göbenstrasse 35, Wiesbaden.

### Design Patents Issued, With Dates of Issue

871,310 (February 21, 1924). Heel with exchangeable, horseshoe-formed edge of rubber or the like. Freiherr Joachim von Lyncker, Hamburgerstrasse 15, Frankfurt-am-Main.

871,357 (February 29, 1924). Rubber sole with leather attachment. Max Blechschmidt, Neuwelt, Schwarzenberg.

871,389 (March 29, 1924). Rubber wash cloth. Continental Caoutchouc und Gutta Percha Compagnie, Hannover.

871,404 (May 7, 1923). Flexible roll of rubber with textile insert. Paul G. Ehrhardt, Eyssenbeckstrasse 41, Frankfurt-am-Main.

871,524 (March 12, 1924). Tread with chain and leather insert. Georg Fischer, Herzogstrasse 8, Frankfurt-am-Main.

871,543 (March 22, 1924) Block with rubber insert at both sides. Harry P. Altmann, Nurnbergerstrasse 47, Dresden.

871,588 (April 3, 1924). Pocket inhaler. Alfred E. Schlichting, Kartauserstrasse 25, Freiburg i. Br.

871,789 (April 5, 1924). Nipple. Hans Brunner, Knauerstrasse 10, Nürnberg.

871,881 (April 7, 1924). Conical irrigator. A. Dargatz & Co., Hamburg.

871,882 (April 7, 1924). Chewing gum in sanitary packing. Josef Hubert Eschenlohr, Mittleres Kreuz F. 276, Augsburg.

872,077 (April 7, 1924). Windshield packing. Traugott Golde, A.-G., Gera-Reuss.

872,203 (February 26, 1923). Tubeless, demountable automobile tire. Karl Paulmann and Adolf Zunft, Strassfurt.

872,288 (April 12, 1924) Tube with separate injection piece. Merz-Werke, Gebr. Merz, Frankfurt-am-Main—Rödelheim.

872,294 (April 14, 1924). Holder with exchangeable rubber sheet for heels. Ernest Block, Benderstrasse 93, Dusseldorf.

872,323 (March 25, 1924). Colored rubber typewriter keys. Adolf Kempf, Thuringer Strasse 24, Neukölln.

872,343 (April 5, 1924). Fur wristlets with rubber drawband. Max Helbig, Brüderstrasse 19, Chemnitz.

872,443 (April 4, 1924). Clothing band with raw rubber insert. Carl Bibl, Chemnitz.

872,588 (April 15, 1924). Injection syringe with bayonet joint connection of knob and canule. Paul Altmann, Luisenstrasse 47, Berlin.

872,675 (April 14, 1924). Comforter for infants. Hans Schneekloth, Kötzschenbroda.

872,680 (April 14, 1924). Rupture band. Karl Heinrich Wilk, Suhl in Thüringen.

872,880 (April 14, 1924). Pocket inhaler. Carl Waytacek, Glastechnische Werkstätten, G. m. b. H., Hamburg.

872,889 (April 17, 1924). Rubber sleeves with ventilation. Johann A. Müller, Königstrasse 56-57, Berlin.

872,904 (February 8, 1924). Adjustable rupture band. Ernst Mesch, Bad Blankenburg.

873,004 (February 26, 1923). Inner tube. Jean Viven, Villefranche de Rouergue, Aveyron, France; represented by: R. H. Korn, Berlin, S. W. 11.

873,262 (April 19, 1924). Rubber suspension hook with suction cup. Erich Hoppe, Lauchhammer, Prov. Sachsen.

873,413 (February 19, 1924). Anti-slip cover for pneumatic tires. Franz Gebele, Zwieselberg bei Freudenstadt, Schwarzwald.

873,418 (March 13, 1924). Pacifier with separable parts. Paul Vogel, Bismarckstrasse 53a, Stuttgart.

873,419 (March 13, 1924). Pacifier with separable parts. Paul Vogel, Bismarckstrasse 53a, Stuttgart.

873,545 (April 14, 1924). Sponge rubber jacket for thermos bottles. Harburger Gummiwaren-Fabrik Phoenix A.-G., Harburg-an-der-Elbe.

873,765 (April 26, 1924). Rubber heel with metal insert. Franz Körner, Dinslaken.

873,909 (May 28, 1923). Demountable flange for tires. The Dunlop Rubber Co., Limited, London; represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

874,064 (April 26, 1924). Rubberized bib for children. Sachsland Gummiwarenfabrik, Bürgel.

874,072 (April 30, 1924). Reclining cushion of rubber or rubber substitute. Hermine Weinheimer, née Meyer, Schäferstrasse 16, Düsseldorf.

874,144 (April 22, 1924). Joker ball of rubber. Sachsland Gummiwarenfabrik, Bürgel, Thüringen.

874,545 (April 17, 1924). Rubber type with mark for placing. Friedrich Schumacher, Vivatgasse 4, Bonn.

874,546 (April 17, 1924). Rubber type with mark for placing. Friedrich Schumacher, Vivatgasse 4, Bonn.

874,643 (April 28, 1924). Sanitary garment. Wilhelmine Höffken, née Werners, Weissenburgstrasse 65, and Maria Bornemann, née Quantius, Moltkestrasse 102, Düsseldorf.

874,682 (May 7, 1924). Instrument for examining and irrigating orifices of the body. Firma C. G. Heinemann, Leipzig.

874,733 (April 11, 1924). Pneumatic tire casing. Hannoversche Gummiwerke Excelsior, A.-G., Hannover-Limmer.

874,772 (May 6, 1924). Toy balloons of multicolor rubber sheet. Sachsland Gummiwarenfabrik, Bürgel in Thüringen.

874,786 (May 9, 1924). Endless rubber tire for vehicles with spiral spring insert. Gummiwarenfabrik Grahneis & Börner, Zipsendorf.

875,021 (March 14, 1924). Head protector with sponge rubber protective cushions for forehead, ears and chin. Eduard Genz, Celle.

875,117 (March 12, 1924). Syringe for medical purposes. Dr. Herbert Grevé, Hans Jakobstrasse 2, Freiburg, i. Br.

875,148 (April 29, 1924). Rubber bag. William Sachs, Lessingstrasse 33, Berlin.

# Trade Marks

## The United States

### Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

### Granted June 10, 1924, Act of February 20, 1905

185,183 TOP-NOTCH—tires and tubes of rubber and fabric. The Advance Rubber Co., Brooklyn, N. Y.

185,229 THE BYSTANDER—golf bags, clubs and balls. J. W. Stevens & Co., New York, N. Y.

185,259 Distinctive arrangement resembling a central M, the straight sidelines of which form the initial stroke of the letter R, before and after it, the first R being turned to face the second—mineral rubber. H. H. Robertson Co., Pittsburgh, Pennsylvania.

185,298 Representation of a balloon in flight, on the gas bag of which is the word HOOD, with an arrow running through the center of the word—rubber tires and tubes. Hood Rubber Co., Watertown, Massachusetts.

185,333 Representation of a seal with uplifted head; above it the words: NON-CURL SLATE COATED, FIRE RESISTING, and below it the words: QUALITY SEAL SHINGLES, and under these the words: TRADE MARK; the whole enclosed within an oval outline—roofing of shingles, rubber, asphalt, felt and paper, etc. Baxton Roofing & Supply Co., Milwaukee, Wisconsin.

### Act of March 19, 1920, Section 1(b)

185,343 WRIGHT—rubber and fabric tires. The McKone Tire & Rubber Co., Millersburg, Ohio.

### Granted June 17, Act of February 20, 1924

184,412 GRAMWILL RUBBABUBBLES—confection consisting of a hollow tube of licorice with a rubber balloon attached thereto. W. G. Ingram, Jr., London, England.

185,437 H. C. A. PARIS—stationers' supplies, including rubber erasers. Societe Anonyme "Crayons Conte," Regny and Paris, France.

185,452 AT-RU-CO, the word being underlined—rubber hose. E. Schulthess, trading as Atlas Rubber Co., New York, N. Y.

185,454 BESTEX—brake linings, brake band linings, and clutch facings. The Asbestos Textile Co., North Brookfield, Massachusetts, and New York, N. Y.

185,456 AZTEC, above which in the background is the representation of a pyramid and the rising sun—brake linings and brake band linings. The Asbestos Textile Co., North Brookfield, Massachusetts.

185,517 Outline of a figure resembling a fancy name plate and bearing on the middle portion the word BLIMP, the letters following the outline to form an obtuse angle top and bottom, the I being at the apex—tires. Lee Tire & Rubber Co., Conshohocken, Pennsylvania.

### Granted June 24, Act of February 20, 1905

185,610 Black disk with white center, and in white letters on the black background the word: CHA-ROES—rubber shield to protect the sleeve of a person doing laundry work. Charles Roeseler, New York, N. Y.

185,652 The word THERMATOMIC, with the letters graded in size so that the smallest is at the center the outline of the border following the curve of the lettering and having a double ruled circle behind it at the center—rubber belting, rubber hose, rubber machinery packing, and rubber tires. Thermatomic Carbon Co., Pittsburgh, Pennsylvania.

185,677 Within an equilateral triangle the word MOORE, the letters graded in size to conform with the lines of the border; across the face of the design the word QUALITY in black letters, with the word FABRIC in small letters on the left and COMPANY on the right. Moore Fabric Co., Pawtucket, Rhode Island.

185,756 On an unfurled pennant the word VARCO—boots and shoes of leather, rubber, fabric, or combinations of these. H. G. Cushman, doing business as The Varsity Co., Norwood, Massachusetts.

### Act of March 19, 1920, Section 1(b)

185,949 Representation of a pennant bearing the word YALE—rubber tires The Yale Tire & Rubber Co., New Haven, Connecticut.

### Granted July 1, 1924, Act of February 20, 1905

186,040 DRY-DOWNE—waterproof sheeting. I. B. Kleinert Rubber Co., New York, N. Y.

### Act of March 19, 1920, Section 1(b)

186,200 WEAR-WELL—inner tubes, pneumatic tires, cord tires and fabric tires. The Golden Eagle Buggy Co., Atlanta, Georgia.

186,203 LOCOMOTIVE—hose made of rubber reinforced with fabric. The B. F. Goodrich Co., New York, N. Y.

### Granted July 8, 1924, Act of February 20, 1905

186,274 COMUS—hard rubber combs for dressing, ornamenting and cleaning the hair. American Hard Rubber Co., Hempstead and New York, N. Y.

186,275 ADMIRAL—hard rubber combs for dressing, ornamenting and cleaning the hair. American Hard Rubber Co., Hempstead and New York, N. Y.

186,313 DUCKTITE—waterproofing compound. Claude Steep, Hartsville, Massachusetts.

186,317 FALCO, the tops of the letters extending up to form an acute angle with the apex at the top of the L—leather, cotton duck, or rubber, and combination of cotton duck and rubber belting; asbestos, rubber, or combination of cotton duck and rubber packings; and rubber hose. Foster-Alexander Corp., Birmingham, Alabama.

186,328 EMSCO, in block letters—brake lining, machinery packing, and hose and belting of rubber and fabric; rubber valves, rubber spiral packing, rubber sheet packing, rubber piston sleeves, packing head rubbers, blow-out preventer rubbers, etc. E. M. Smith Co., Los Angeles, California.

186,378 RADIO—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,379 STYLUS—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,380 ATHLETE—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,381 TRIUMPH—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,384 ESMERALDA—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,385 FLEXOR—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,386 NIOBE—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,390 ADMIRATION—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,391 AUTOMOBILE—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,392 PENNANT—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,393 TUXEDO—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

186,409 Representation of a soldier with gun and bayonet stepping through the letter V—rubber balls for games; and swimming belts. Victor Novelty Mfg. Co., Ashland, Ohio.

## The Dominion of Canada

### Registered

35,702 The word COLUMBINE, and a lady toe dancer poised on a ball—balls for games. The Game Balls Co., Ltd., Windmill Road, Brentford, Middlesex, England.

35,764 Representation of a golf ball—pads made entirely or chiefly of rubber, for application to boots and shoes. Blakey's Boot Protectors, Ltd., Armley Malleable Ironworks, Modder Place, Armley, Leeds, Yorkshire, England.

35,769 RAINBOW—balls for games. The Game Balls Co., Ltd., Windmill Road, Brentford, Middlesex, England.

35,777 MADAME X—corsets and girdles. The Thompson-Barlow Co., New York, N. Y.

35,802 VARIOLASTIC—elastic webbing, corsets, brassieres, suspenders, garters, etc. Kops Brothers, Ltd., Toronto, Canada.

35,858 Word HI-KICKS, displayed in plain black letters—shoes with leather or rubber soles. Endicott-Johnson Corp., Endicott, N. Y., U. S. A.

35,857 The word MACGREGOR, beneath which is the symbol Ace of Clubs and the word and letter DAYTON O enclosed in an oblong elliptical figure—game apparatus including golf balls. The Crawford, MacGregor and Canby Co., Dayton, Ohio, U. S. A.

35,878 The words AIR TITE AUTO PATCH above the representation of a torn or blown-out inner tube, with the word BEFORE just above the representation of an inner tube repaired by a rectangular patch, and the words AIR-TITE-PATCH within the outline of the patch; below this the words AFTER, and THE HOTTER THE ROAD THE TIGHTER IT HOLDS—material for repairing rubber goods. John Clutton, St. Thomas, Ontario.

35,901 ALLBRIGHT—brushes. Rubberset Co., Ltd., Birmingham, England.

## The United Kingdom

### Published June 11, 1924

442,181 MOX—vulcanizing apparatus included in Class 18. Aktiebolaget Mox, 2 Lilla Nygatan, Gothenburg, Sweden. For service in the United Kingdom address: W. P. Thompson & Co., 12 Church street, Liverpool.

447,570 FLEXICORD—all goods included in Class 40. The India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106 Cannon street, London, E. C. 4.

447,571 FLEXICORD—tubular hose and steam and hydraulic packing. The India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106 Cannon street, London, E. C. 4.

447,660 Representation of two balloons, one round and one cylindrical, the latter crossing the former and bearing the word EMPIRE—toy balloons and toy airships made of rubber. V. G. Ginn, 184 Fleet street, London, E. C. 4.

447,714 SILVERVOX—all goods in Class 8. The India Rubber, Gutta Percha & Telegraph Works Co., Ltd., 106 Cannon street, London, E. C. 4.

B447,879 CRYSTAL, in white letters on a black background—elastic webs of rubber. Archibald Turner & Co., Ltd., 7 Jewin street, London, E. C. 1.

### Published June 18, 1924

445,134 HOTSPUR—natural unvulcanized crêpe rubber in sheets, included in Class 4. Rubber Industries, Ltd., Downham Mills, Chestnut Road, Tottenham, London, N. 17.

447,189 SOTO—unburstable rubber balls for games. L. Gaisman, trading as The Hooley Hill Rubber & Chemical Co., The Rubber Works, Canning street, Audenshaw, near Manchester.

447,396 A ten-pointed figure bearing the name WALTON—hot water bottles, and football bladders. The New Liverpool Rubber Co., Ltd., 292 Vauxhall Road, and Rice Lane, Walton, Liverpool.

### Published June 25, 1924

448,122 SCANDURA—brake linings made from an impregnated textile material covered by Class 50. Scandinavia Belting, Ltd., 59 Southwark street, London, S. E. 1.

448,273 TANTI—rubber machinery belting. W. T. Lambourne, trading as The W. T. Lambourne Co., 5 Henrietta street, Covent Garden, London, W. C. 2.

### Published July 2, 1924

446,953 FIBROK—waterproofing felt, exclusively in Class 50, impregnated with rubber latex. Latex Developments, Ltd., 88 Overstone Road, Northampton.

447,627 ELASTO-SKIT—a game. Frederick Ingold, 19 Green Lanes, Thornton Heath, Surrey.

448,250 LEDTRINDA—roof coverings, waterproofing materials, etc., all being goods included in Class 50. Engert & Rolfe, Ltd., Felt Works, Barchester street, Poplar, London, E. 14.

448,262 PURUB—rubber flooring material included in Class 40. Badham Adolphus Thornhill, 30 Glennie street, Colombo, Ceylon. For service in the United Kingdom address: King's Patent Agency, Ltd., 146a, Queen Victoria street, London, E. C. 4.

448,757 NOMAD—rubber pneumatic and solid tires. H. Welch, trading as The General Motor & Tyre Co., 7 and 7a Caledonian Road, London, N. 1.

## New Zealand

### Published June 12, 1924

B19,658 ALL-WEATHER—rubber and fabric and rubber tires. The Goodyear Tire & Rubber Co., Akron, Ohio, U. S. A.

20,942 RADION—radio apparatus, etc. American Hard Rubber Co., Hempstead and New York, N. Y., U. S. A.

21,190 EARL—bicycle tires and tubes. E. Reynolds & Co., Ltd., Lower Tory street, Wellington.

# Designs

## The United States

### Issued* June 10, 1924

64,833 Tire tread. Term 14 years. R. D. Belden, assignor to Dunlop Tire & Rubber Corp. of America, both of Buffalo, New York.

64,834 Tire. Term 14 years. F. L. Braender, Montclair, assignor to Braender Rubber & Tire Co., Rutherford, both in New Jersey.

64,857 Tire tread. Term 14 years. S. D. McLaughlin, assignor to Dunlop Tire & Rubber Corp. of America, both of Buffalo, New York.

### Issued* June 17, 1924

64,889 Tire tread. Term 7 years. J. M. Cranz, Buffalo, New York.

64,896 Bathing slipper. Term 3½ years. C. W. Greilich, Long Island City, New York.

64,898 Rubber sole. Term 3½ years. W. M. Gunlock, assignor to Dryden Rubber Co., both of Chicago, Illinois.

64,899 Tire. Term 14 years. M. B. Haines, assignor to The Erie Rubber Corporation, both of Sandusky, Ohio.

64,903 Tire or similar article. Term 7 years. R. W. Hutchens, assignor to Gillette Rubber Co., both of Eau Claire, Wisconsin.

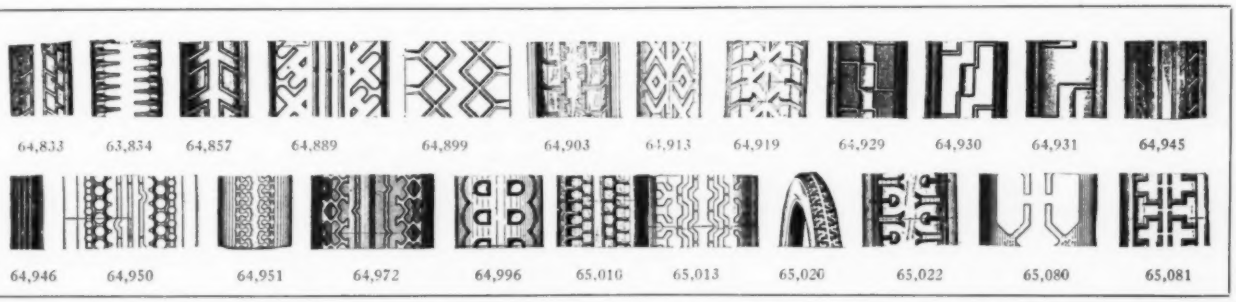
64,913 Tire tread. Term 3½ years. W. E. McCormish, Cuyahoga Falls, assignor to The American Tire Corporation, Cleveland, both in Ohio.

64,914 Rubber sole. Term 14 years. F. A. McDonald, assignor to Servus Rubber Co., both of Rock Island, Illinois.

64,919 Tire casing. Term 7 years. W. R. Meutsch, assignor to Newbury Tire & Rubber Co., both of Chicago, Illinois.

64,929 Tire tread. Term 14 years. W. H. Paull, Hampton-in-Arden, England, assignor to Dunlop Tire & Rubber Corp. of America, Buffalo, New York.

64,930 Tire tread. Term 14 years. W. H. Paull, Hampton-in-Arden, England, assignor to Dunlop Tire & Rubber Corp. of America, Buffalo, New York.




64,931 Tire tread. Term 14 years. W. H. Paull, Hampton-in-Arden, England, assignor to Dunlop Tire & Rubber Corp. of America, Buffalo, New York.

64,945 Tire tread. Term 14 years. H. Willshaw, assignor to Dunlop Tire & Rubber Corp. of America, both in Buffalo, New York.

64,946 Tire. Term 7 years. H. C. Hower, Chicago, Illinois.

### Issued* June 24, 1924

64,950 Tire. Term 14 years. E. H. Broadwell, Longmeadow, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts.

64,951 Tire tread. Term 7 years. A. E. Caldwell, assignor to Continental Rubber Works, both in Erie, Pennsylvania.

64,969 Hard rubber battery box. Term 14 years. A. A. Glidden and J. E. Perrault, assignors to Hood Rubber Co., both in Watertown, Massachusetts.

64,972 Tire. Term 14 years. A. Hargraves, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

64,996 Tire. Term 14 years. Esther Madlener, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

65,010 Pneumatic tire. Term 14 years. V. A. Parker, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

65,013 Tire. Term 14 years. Marion J. Rich, Trenton, New Jersey.

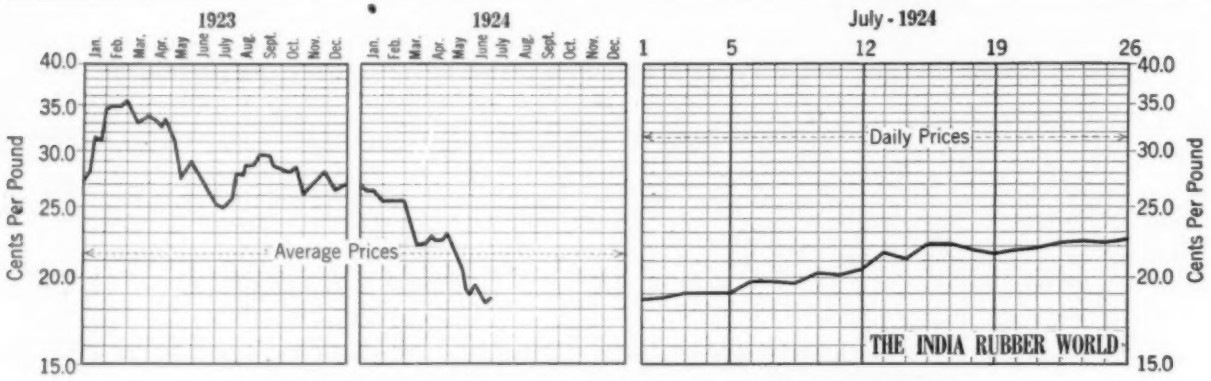
65,020 Pneumatic tire. Term 14 years. E. M. Sears, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

65,022 Tire. Term 14 years. H. B. Soulen, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

### Issued* July 1, 1924

65,080 Tire tread. Term 14 years. H. D. Reichard, Akron, Ohio.

65,081 Pneumatic tire. Term 14 years. S. B. Robertson, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.




**Ratio Graph of New York Average Sales Prices of Spot Ribbed Smoked Sheets**

# Review of the Crude Rubber Market

## New York

THE crude rubber market was notable for activity of interest and consistently increasing prices throughout the month, the chief underlying cause being the approach of the third quarter with announcement August 1 of exportable allowance of plantation rubber under the Stevenson plan. Ribbed smoked sheet advanced practically four cents during the month and was continuously in short supply and active demand. First latex crêpe was maintained in price at 1 to 1¼ cents over ribs.

Early in July prices were firm, due to higher London cable, with factories cautiously buying mostly for current requirements. Little shipment rubber was being offered and higher prices became probable. Soon the delayed factory requirements, compelled by firm prices and the approach of revised restrictions, resulted in good buying. Firm London cables and higher exchange rate added strength to the market.

With the approach of the next restriction period, dealers covered their shorts in order not to be without rubber.

Following the middle of the month the market was very steady and firm with good factory inquiry and buying for all positions and grades. Evidently consumers are realizing that rubber is not to be much cheaper and have covered some of their future needs.

Higher exchange, light offerings and meager arrivals for the month have lent a firm tone to prices during the last of the month. On July 28 spot ribs advanced to 23½ cents due to London advances and high exchange.

Dealers' trading has been unusually active of late. Upriver fine Pará has risen in sympathy with plantations, and spot stocks are scarce. Balatas are not plentiful and high prices are asked for shipments. Surinam sheet is high on account of continued drought in the producing areas of South America.

Importations of all grades during June, 1924, were 18,840 tons, compared with 32,934 tons one year ago. Plantation arrivals for June, 1924, were 17,810 tons, compared with 31,574 tons one year ago. Total importations of all grades for the six months ended June 30, were 156,316 tons, compared with 190,039½ tons for the corresponding period of last year.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

PLANTATION. July 1. Spot first latex crêpe, 19¾-20 cents; July-Aug., 19⅞-20¼ cents; Aug-Sept., 20¼-20⅜ cents; Oct.-Dec., 20⅜-20½ cents; Jan.-Mar., 20½-20⅝ cents.

July 25. Spot first latex crêpe, 23 cents; Aug., 23⅜-23½ cents; Aug.-Sept., 23½-23⅝ cents; Oct.-Dec., 23¾-23⅞ cents; Jan.-Mar., 24¼-24½ cents.

July 1. Spot ribbed smoked sheets, 18¾-18⅞ cents; July-Aug., 18¾-18⅞ cents; Aug.-Sept., 19-19⅛ cents; Oct.-Dec., 19¼-19⅜ cents; Jan.-Mar., 19⅝-19¾ cents.

July 25. Spot ribbed smoked sheets, 22¼-22⅜ cents; Aug., 22¼ cents; Aug-Sept., 22¼-22½ cents; Oct.-Dec., 22¾-22⅞ cents; Jan.-Mar., 23¼-23⅜ cents.

July 1. Spot No. 1 amber crêpe, 18½-18⅝ cents; July-Aug., 18¾-19 cents; Aug.-Sept., 18¾-19 cents; Oct.-Dec., 19-19¼ cents; Jan.-Mar., 19⅜-19½ cents.

July 25.—Spot No. 1 amber crêpe, 22¼ cents; Aug., 22⅛-22¼ cents; Aug-Sept., 22⅛ cents; Oct.-Dec., 22¾-22⅞ cents; Jan.-Mar., 23¼-23½ cents.

July 1. Spot No. 1 rolled brown crêpe, 16¾-16⅞ cents; July-Aug., 16⅞-17 cents; Aug.-Sept., 17-17⅛ cents; Oct.-Dec., 17¼-17⅜ cents.

July 25. Spot No. 1 rolled brown crêpe, 20¼ cents; Aug., 20⅛ cents; Aug.-Sept., 20¼ cents; Oct.-Dec., 20½-20¾ cents; Jan.-Mar., 21¼-21¾ cents.

SOUTH AMERICAN PARAS AND CAUCHO. July 1. Spot, upriver fine, 20 cents; island fine, 19 cents; upriver coarse, 13 cents; island coarse, 11½ cents; Cametá, 11 cents; caucho ball, 12¾ cents.

July 25. Spot, upriver fine, 22½ cents; islands fine, 20 cents; upriver coarse, 14 cents; Cametá, 13 cents; caucho ball, 13-14 cents.

## New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND.

| PLANTATIONS | June, 1924 | | | | | | | | | | | | | | | | | | | July, 1924 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9 | 10 | 11 | 12 | 13 | 14 | 16 | 17 | 18 | 19 | 20 | 21 | 23 | 24 | 25 | 26 | 27 | 28 | 30 | 1 | 2 | 3 | 4 | 5 |
| Sheet | | | | | | | | | | | | | | | | | | | | | | | | |
| Ribbed smoked | 19½ | 19½ | 19¼ | 19 | 18⅞ | 18⅝ | 18¾ | 18¾ | 18⅝ | 18½ | 18½ | 18½ | 18¼ | 18⅜ | 18¾ | 18⅝ | 18⅜ | 18⅜ | 18⅜ | 18⅝ | 19¼ | 19⅜ | .... | 19⅜ |
| Crêpe | | | | | | | | | | | | | | | | | | | | | | | | |
| First latex | 20¼ | 20⅛ | 19⅞ | 20 | 19⅞ | 19⅝ | 19⅜ | 19⅜ | 19½ | 20 | 19⅞ | 19½ | 19¼ | 19⅛ | 19⅛ | 19½ | 19½ | 19½ | 19⅜ | 19¼ | 20¼ | 20¼ | .... | 20¼ |
| Off latex | 20 | 19⅞ | 19⅜ | 19½ | 19⅜ | 19⅛ | 19 | 18⅞ | 19 | 19½ | 19½ | 19⅛ | 18⅞ | 18⅝ | 19⅛ | 19 | 19 | 19 | 19 | 19¼ | 19¾ | 19⅜ | .... | 19¾ |
| No. 1 blanket | 19 | 19 | 18⅝ | 18⅝ | 18⅝ | 18¼ | 18¼ | 18⅛ | 18⅛ | 18 | 18 | 18¼ | 18⅛ | 18⅛ | 18¼ | 18¼ | 18¼ | 18⅛ | 18⅛ | 18⅛ | 18½ | 18½ | .... | 18½ |
| No. 2 blanket | 18⅛ | 18⅛ | 18¼ | 18⅛ | 18¼ | 18 | 18 | 17⅞ | 17⅞ | 17¾ | 17⅞ | 17⅞ | 17¾ | 17¾ | 17⅞ | 18 | 17¾ | 17¾ | 17¾ | 18 | 18¼ | 18¼ | .... | 18¼ |
| No. 3 blanket | 18⅛ | 18⅛ | 18 | 18⅛ | 18 | 17¾ | 17¾ | 17⅝ | 17⅜ | 17½ | 17½ | 17½ | 17½ | 17½ | 17⅝ | 17⅝ | 17½ | 17¾ | 17½ | 17⅝ | 18⅛ | 18⅛ | .... | 18¼ |
| Thin, clean brown | 18½ | 18¾ | 18 | 18 | 18 | 17⅞ | 17¾ | 17¾ | 17⅞ | 17⅞ | 17⅞ | 17¾ | 17¾ | 17½ | 17⅞ | 17¾ | 17¾ | 17¾ | 17¾ | 17⅞ | 18⅛ | 18⅛ | .... | 18⅛ |
| Sreeky brown | 18 | 17⅞ | 17⅝ | 17⅝ | 17⅝ | 17½ | 17⅜ | 17⅜ | 17½ | 17½ | 17½ | 17⅜ | 17⅜ | 17 | 17⅜ | 17⅜ | 17¼ | 17¼ | 17⅜ | 17⅜ | 17¾ | 17⅞ | .... | 17⅞ |
| Rolled brown | 17⅜ | 17⅜ | 17 | 17⅛ | 17⅛ | 17 | 16¾ | 16¾ | 16¾ | 16⅞ | 16¾ | 16½ | 16¾ | 16¾ | 16¾ | 16½ | 16½ | 16¾ | 16¾ | 16½ | 16⅞ | 17 | .... | 17 |

## New York Quotations

Following are the New York spot rubber quotations, for one year, one month ago, and July 25, the current date:

| Plantation Hevea | July 25, 1923 | June 24, 1924 | July 25, 1924 |
|---|---|---|---|
| **LATEX** | | | |
| Rubber latex (Hevea)..*gal.* | $125@$1.30 | $1.25 @ | $1.25 @ |
| **CREPE** | | | |
| First latex | .28 @.28½ | .19⅛@ | .23 @ |
| Off latex | .27¼@.27⅝ | .18½@ | .23 @ |
| Amber No. 1 | .27⅛@.27½ | @ | .22 @ |
| Amber No. 2 | .26¾@.27 | .17¾@$0.18 | .22 @ |
| Amber No. 3 | .26¼@.26½ | .17¾@.17¾ | .21½@ |
| Brown, clean, thin | .26¼@.26½ | .17¾@ | .21½@$0.21¾ |
| Brown, specky | .25¾@.26 | .17 @ | .21¼@ |
| Brown, roll | .26 @.26½ | .16½@.17 | .20¾@ |
| Sole crêpe | @ | .45 @ | .45 @ |
| **SHEET** | | | |
| Smoked, ribbed | .27¾@.28¼ | .18 @.18¼ | .22⅛@.22⅜ |
| Smoked, plain | .27 @.27½ | @ | @ |
| Unsmoked | †.26½@ | @ | @ |
| **East Indian** | | | |
| **PONTIANAK** | | | |
| Banjermassin | .07 @.07½ | .06 @.07¼ | .06⅝@ |
| Palembang | .07¼@.07¾ | .07½@ | .07 @ |
| Pressed block | .12½@.13 | .12 @.15 | .11½@.12¼ |
| Sarawak | .06½@.07 | .06¾@ | .06½@ |
| **South American** | | | |
| **PARAS** | | | |
| Upriver, fine | .27¼@.27½ | .20 @ | .22½@.22⅜ |
| Upriver, fine | @ | *.26½@ | *.29 @ |
| Upriver, medium | .24½@.24¾ | .17½@.18 | .19 @ |
| Upriver, coarse | .23¾@.24 | .12¾@.13 | .13⅜@.14 |
| Upriver, coarse | @ | *.23¼@.24½ | †.25 @ |
| Islands, fine | 25 @.25¼ | .19 @ | .20 @ |
| Islands, medium | .24 @ | .17 @ | .18 @ |
| Islands, coarse | .14 @.14½ | .11¼@.11½ | .12 @ |
| Cametá | .14 @.14¼ | .11 @ | .13 @ |
| Acre Bolivian, fine | .27½@ | .20¾@ | .22¼@ |
| Acre Bolivian, fine | @ | *27 @ | * @ |
| Beni Bolivian | .27¾@ | .21½@ | .22½@ |
| Madeira, fine | .27¾@.28 | .22 @ | .22½@ |
| Peruvian, fine | @ | .19 @ | .19½@ |
| Tapajos, fine | .26 @ | .18½@.19 | .19 @ |
| **CAUCHO** | | | |
| Upper caucho ball | .24½@.24¾ | .12¾@.13½ | .14 @ |
| Upper caucho ball | @ | *.22 @.24 | *.25 @ |
| Lower caucho ball | .24 @ | .12 @.12½ | .13 @ |
| **Maniçobas** | | | |
| Ceará negro heads | @ | .19 @ | .19 @ |
| Ceará scrap | @ | .18 @ | .08 @ |
| Maniçoba 30% guaranty | @ | .16 @ | .17 @ |
| Mangabeira, thin sheet | @ | .20 @ | .22 @ |
| **Centrals** | | | |
| Central scrap | .17 @.18 | .13½@ | .13¼@ |
| Central wet sheet | .10 @.12 | .09 @ | @ |
| Corinto scrap | .17 @.18 | .13½@ | .13¼@ |
| Esmeralda sausage | .17 @.18 | .13½@ | .13¼@ |
| Guayule washed and dried | .26 @ | .22 @ | .22 @ |
| **Africans** | | | |
| Benguela, No. 1, 28½%.. | †.18 @ | @ | @ |
| Benguela, No. 2, 32½%.. | .15 @ | †.11 @ | †.11 @ |
| Congo prime, black upper | .22 @.24 | †.16 @.17 | †.16 @.17 |
| Congo prime, red upper | .23 @ | †.15 @.16 | †.15 @.16 |
| Kassai, black | .22 @.24 | †.16 @.17 | †.16 @.17 |
| Kassai, red | .23 @ | †.15 @.16 | †.15 @.16 |
| **Gutta Percha** | | | |
| Gutta Siak | .17½@.18 | .16 @ | .16 @.16¼ |
| Gutta Soh | @ | .28½@ | .27 @ |
| Red Macassar | 3.00 @ | 2.90 @3.00 | 2.90 @3.00 |
| **Balata** | | | |
| Block, Ciudad Bolivar | .70 @.71 | .65 @ | .63 @.65 |
| Colombia | .58 @.60 | .54 @ | .50 @.54 |
| Panama | .58 @.60 | .54 @ | .49 @.53 |
| Surinam, sheet | .74 @ | .78 @ | .80 @.82 |
| amber | .76 @ | .78 @ | .80 @.82 |
| **Chicle** | | | |
| Honduras | .62 @ | ‡.58 @.68 | ‡.58 @.68 |
| Yucatan, fine | .65 @ | ‡.58 @.68 | ‡.58 @.68 |

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.
‡Duty paid.

## London

At the beginning of July the market opened dull and featureless but soon developed speculative activity and improvement by active American buying. This condition held with increasing prices as the month advanced and sellers' ideas were met. About the middle of the month spot reached a shilling, the market became erratic and speculative and gained strength with the advance of the rate of exchange, holding strongly at the shilling level.

There was little American interest in futures but a strong one was later developed as advancing Sterling rates strengthened the price situation late in the month.

Reported London stocks increased 441 tons between June 24 and July 22. The weekly stocks were as follows: June 24, 51,065 tons; July 1, 50,975 tons; July 8, 51,102 tons; July 15, 51,103 tons; July 22, 51,506 tons.

## Singapore

July 1 Singapore spot prices were below parity with those of New York or London, when the price was 9½ pence. This condition gave way to a rise to 10 pence based on appearance of better demand from those centers and strong demand for spot. The trend of the market for the month showed somewhat irregular improvement, advancing from 9½ pence July 1 to 11½ pence July 24 when buyers for American interests were purchasing freely and the scarcity and demand for July rubber increased prices.

Shipments of plantation grades from Singapore in June were 18,084 tons, as against 19,674 tons in May.

## Comparative Low and High New York Spot Rubber Prices

| | July 1924* | July 1923 | July 1922 |
|---|---|---|---|
| **PLANTATIONS** | | | |
| First latex crêpe | $0.19¾@$0.23½ | $0.24⅝@$0.28 | $0.14½@$0.15¾ |
| Smoked sheet, ribbed | .18⅝@ .22⅜ | .24¾@ .27¾ | .14½@ .15¾ |
| **PARAS** | | | |
| Upriver, fine | .20 @ .22¼ | .26¼@ .26¾ | .18 @ .20 |
| Upriver, coarse | .12½@ .15¼ | .22⅜@ .23½ | .12¼@ .14 |
| Islands, fine | .17¾@ .20 | .24½@ .25¼ | .16⅞@ .17¼ |
| Islands, coarse | .11¼@ .17¼ | ..... | .08 @ .09½ |
| Cametá | .11 @ .13 | .13 @ .13½ | .08 @ .09½ |

*Figured to July 25, 1924.

# Reclaimed Rubber

Although indications of early fall revival in the rubber industry are now discernible in the demand for many rubber goods manufacturing supplies they are not reflected, as yet, in the demand for reclaims. Some changes in price are noted both upward and downward. Prices are firm and low throughout the list.

Present quotations are possible only by correlating close buying of scraps with efficient reclaiming processes. The standard products in each grade represent low volume costs and good tensile properties.

Reclaiming plants generally are operating on a part time basis averaging about half capacity and building up stocks for fall requirements, by which time reclaimers anticipate more active production will be justified.

## New York Quotations

July 25, 1924

| | | |
|---|---|---|
| **Auto Tire** | | |
| Black | *lb.* | $0.08¼@$0.08½ |
| Black, washed | *lb.* | .09¼@ .10 |
| Dark gray | *lb.* | .09 @ .09½ |
| Light gray | *lb.* | .10¼@ .10½ |
| White | *lb.* | .10 @ .12½ |
| **Shoe** | | |
| Unwashed | *lb.* | .08¼@ .09 |
| Washed | *lb.* | .12 @ .12¼ |

### Reclaimed Rubber—*Continued*

**Tube**

| | | | |
|---|---|---|---|
| No. 1 | lb. | .13 @ | .13½ |
| No. 2 | lb. | .09½ @ | .10 |

**Uncured Tire Friction**

| | | | |
|---|---|---|---|
| No. 1 | lb. | .19 @ | .20 |
| No. 2 | lb. | .14 @ | .15 |

**Miscellaneous**

| | | | |
|---|---|---|---|
| High grade, red | lb. | .13 @ | .13¼ |
| High tensile, black | lb. | .13½ @ | .14 |
| Mechanical blends | lb. | .05 @ | .06 |
| Truck tire | lb. | .07½ @ | .07¼ |

## The Market for Rubber Scrap

During the past month there has been virtually no consumers' demand for any grade of rubber scrap. Reclaimers still have ample stocks for maintaining current needs for some time to come and will not be interested in scrap purchases to any marked extent before the fall months. Scrap dealers are warehousing their purchases.

Early in the month tubes for export became the feature of a quiet market and later in the month a better tone was noted in rubber scrap in general.

BOOTS AND SHOES. Both east and west business in boots and shoes has been mainly at a standstill. Late in the month a small amount of buying developed at very low prices.

INNER TUBES. Aside from some export business at low prices, no interest has developed in inner tubes to the disadvantage of other scrap grades.

MIXED TIRES. Early in the month activity in mixed tire scrap was at low ebb. Later the market developed a fairly strong tone, although there was no business in the East.

### Consumers' Quotations for Carload Lots Delivered

July 25, 1924

**Boots and Shoes**

| | | | |
|---|---|---|---|
| Boots and shoes, black | lb. | $0.02 @ | $0.02⅛ |
| Trimmed arctics | lb. | .01½ @ | .01⅝ |
| Untrimmed arctics | lb. | .00⅞ @ | .01 |

**Hard Rubber**

| | | | |
|---|---|---|---|
| Battery jars, black compound | lb. | .01 @ | .01¼ |
| No. 1 scrap | lb. | .05 @ | .06 |

**Inner Tubes**

| | | | |
|---|---|---|---|
| No. 1 | lb. | .02⅞ @ | .03 |
| No. 2 | lb. | .01¾ @ | .02 |
| Red | lb. | .01⅝ @ | .01¾ |

**Mechanicals**

| | | | |
|---|---|---|---|
| Black scrap, mixed | lb. | .00½ @ | — |
| Heels | lb. | .00½ @ | — |
| Horse-shoe pads | lb. | .00¾ @ | — |
| Hose, air brake | ton | 12.00 @ | 13.00 |
| regular | ton | 9.00 @ | 10.00 |
| Red, scrap, mixed | lb. | .01 @ | 0.01¼ |
| White, scrap, mixed | lb. | .01 @ | 0.01¼ |

**Tires**

**PNEUMATIC**

| | | | |
|---|---|---|---|
| Auto peelings | ton | 10.00 @ | 12.00 |
| Bicycle | ton | 7.00 @ | 8.00 |
| Standard white autos, with beads | ton | 18.00 @ | 20.00 |
| Mixed autos, with beads | ton | 11.00 @ | 12.00 |
| Stripped, unguaranteed, with beads | ton | 10.00 @ | 10.50 |

**SOLID**

| | | | |
|---|---|---|---|
| Carriage | ton | 18.00 @ | 20.00 |
| Irony | ton | 10.00 @ | 15.00 |
| Truck, clean | ton | 18.00 @ | 20.00 |

### RUBBER-LINED EXTRACTOR

In tin weighting silk a rubber lined extractor is used in place of an open vat because of the considerable saving in tin liquor effected which is returned to the standing liquor. Otherwise more liquor remains in the silk and is subsequently lost in the washing operation.

## Official India Rubber Statistics for the United States

### Imports of Crude and Manufactured Rubber

| | May, 1923 | | May, 1924 | |
|---|---|---|---|---|
| | Pounds | Value | Pounds | Value |
| UNMANUFACTURED—*free* | | | | |
| Crude rubber | | | | |
| From France | 375,242 | $113,147 | 78,345 | $18,936 |
| Netherlands | 396,849 | 117,161 | ..... | ..... |
| Portugal | ..... | ..... | ..... | ..... |
| United Kingdom | 15,181,325 | 5,007,118 | 4,241,853 | 1,003,767 |
| Canada | 38,895 | 12,097 | 27,470 | 4,866 |
| Central America | 9,632 | 4,338 | 1,265 | 181 |
| Mexico | 115 | 19 | ..... | ..... |
| Brazil | 2,682,701 | 497,772 | 3,010,415 | 472,951 |
| Peru | 142,541 | 37,435 | 29,020 | 7,878 |
| Other So. America | 191,158 | 31,273 | 221,880 | 26,277 |
| British E. Indies | 50,688,652 | 16,196,383 | 43,324,105 | 10,087,352 |
| Dutch E. Indies | 9,485,989 | 2,644,128 | 11,155,132 | 2,665,527 |
| Other countries | 914,348 | 292,351 | 77,871 | 16,526 |
| Totals | 80,107,447 | $24,953,222 | 62,167,356 | $14,304,261 |
| Balata | 72,694 | 48,173 | 132,602 | 71,418 |
| Jelutong or Pontianak | 1,548,355 | 148,485 | 1,801,751 | 178,037 |
| Gutta percha | ..... | ..... | 367,573 | 66,070 |
| Guayule | ..... | ..... | 569,400 | 100,021 |
| Rubber scrap | 2,113,931 | 208,633 | 1,061,242 | 37,541 |
| Totals | 83,842,427 | $25,358,513 | 66,099,924 | $14,757,348 |
| Chicle—*dutiable* | 1,111,962 | $557,620 | 736,221 | $378,991 |
| MANUFACTURED—*dutiable* | | | | |
| Rubber belting | 34,508 | $25,088 | 21,833 | $17,072 |
| Other manufactures of substitutes for rubber | ..... | 70,749 | ..... | 266,315 |
| Totals | 34,508 | $95,837 | 21,833 | $283,387 |

### Exports of Domestic Merchandise

| | | | | |
|---|---|---|---|---|
| MANUFACTURED | | | | |
| India rubber | | | | |
| Reclaimed | 548,061 | 65,953 | 493,714 | 47,375 |
| Scrap and old | 1,491,955 | 70,289 | 2,105,893 | 74,529 |
| Footwear | | | | |
| Boots—*pairs* | 17,377 | 46,833 | 15,280 | 46,613 |
| Shoes—*pairs* | 38,038 | 33,704 | 64,536 | 55,803 |
| Canvas shoes with rubber soles—*pairs* | 368,439 | 286,738 | 261,704 | 216,952 |
| Druggists' rubber sundries | 55,988 | 61,131 | ..... | ..... |
| Water bottles and fountain syringes—*number* | ..... | ..... | 13,867 | 12,168 |
| Other druggists' rubber sundries | ..... | ..... | 52,666 | 68,535 |
| Bathing caps—*dozen* | ..... | ..... | 17,157 | 28,667 |
| Hard rubber goods | | | | |
| Battery jars and accessories | 47,350 | 10,545 | 20,499 | 7,049 |
| Other electrical supplies | 10,143 | 5,824 | 7,950 | 4,915 |
| Other hard rubber goods | 76,282 | 53,985 | 49,644 | 59,519 |
| Tires | | | | |
| Pneumatic casings | | | | |
| For automobiles—*number* | 134,681 | 1,475,439 | 125,120 | 1,574,735 |
| Others—*number* | 7,984 | 34,151 | 4,042 | 14,063 |
| Pneumatic tubes | | | | |
| For automobiles—*number* | 101,306 | 174,923 | 94,682 | 187,300 |
| Others—*number* | 7,065 | 7,503 | 3,820 | 3,733 |
| Solid tires | | | | |
| For automobiles and motor trucks—*number* | 7,023 | 178,823 | 9,904 | 248,624 |
| Others | 45,179 | 11,494 | 169,753 | 39,379 |
| Tire repair materials | 73,405 | 33,059 | 113,072 | 45,768 |
| Belting | 385,175 | 212,668 | 374,775 | 227,831 |
| Hose | 389,923 | 156,882 | 354,692 | 146,959 |
| Packing | 101,216 | 49,092 | 136,844 | 65,489 |
| Soles and heels | 154,631 | 53,156 | 257,768 | 80,100 |
| Thread | 122,506 | 121,382 | 84,958 | 91,576 |
| Other rubber manufactures | 546,236 | 288,102 | 431,193 | 223,018 |
| Totals | ..... | $3,431,676 | ..... | $3,570,700 |

### Exports of Foreign Merchandise

| | | | | |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Crude rubber | 2,104,562 | $673,100 | 2,083,688 | $409,642 |
| Balata | 3,172 | 2,837 | 56,983 | 38,254 |
| Jelutong or Pontianak | ..... | ..... | ..... | ..... |
| Gutta percha and rubber substitutes and scrap | ..... | ..... | ..... | ..... |
| Totals | 2,107,734 | $675,937 | 2,140,671 | $447,896 |
| Chicle | ..... | ..... | 8,110 | $3,298 |
| MANUFACTURED | | | | |
| Gutta percha and india rubber | 1,031 | $1,019 | 46,119 | $12,873 |
| Totals | 1,031 | $1,019 | 46,119 | $12,873 |

Details of exports of domestic merchandise by countries during May, 1924, appears on pages 772-775 of this issue.

# The Market for Chemicals and Compounding Ingredients

New York

RUBBER manufacturers are operating cautiously but viewing the immediate future with more confidence because the industry has taken an upward trend from the slump of recent months. Business in compounding ingredients has improved, particularly in those lines that show low volume cost combined with technical adaptation in competitive compounding.

CARBON BLACK. Some indications have been noted of increasing demand from tire manufacturers. The price continues steady as for several months past.

FILLERS. Although a greater tonnage of whiting is used in rubber than of clay yet the latter is gaining steadily in popularity in general as well as specific compounding. Leading miners and refiners of clay for rubber makers' use have recently increased holdings of clay deposits, and consolidated producing and shipping facilities by including additional works.

LEAD PIGMENTS. Sales of litharge and sublimed lead have been stimulated by recent price reduction. The demand by the rubber trade, however, has been of a routine nature.

ORGANIC ACCELERATORS. In the campaign of education on the use of accelerators, dealers have not stressed the important incidental advantage they offer for amortizing curing equipment by savings in time reduction of vulcanization. In this respect superaccelerators have a distinct advantage and are found indispensable in current practice. Demand is normal and prices unchanged.

THERMATOMIC CARBON. This material is increasing in importance as a rubber compounding ingredient. It is derived from natural gas by special process and is unlike carbon black in its properties and action in rubber work. It is not a substitute for carbon black but can be used independently or in part replacement for zinc oxide or carbon black. It also will replace rubber in volume proportions to a certain extent, and has the advantage of low volume cost.

ZINC OXIDE. Zinc oxide is well established as a staple rubber ingredient of well defined technical value. As a basic ingredient in tires the demand has recently shown some increase. Prices have changed but little during the month.

## New York Quotations

July 25, 1924

### Accelerators, Inorganic

| | | | |
|---|---|---|---|
| Lead, carbonate | lb. | $0.09¼ | @ |
| Lead, red | lb. | .10½ | @ |
| sublimed blue | lb. | .09¼ | @ |
| sublimed white | lb. | .09¼ | @ |
| Lime, flour | lb. | .02½ | @ |
| R. M. | lb. | .01¼ | @ |
| R. M. hydrated | ton | 25.00 | @ |
| superfine | lb. | .01½ | @ $0.02 |
| Litharge, domestic | lb. | .10 | @ .12 |
| imported | lb. | *.17 | @ |
| Magnesia, carbonate, light | lb. | .07¼ | @ .09 |
| calcined, light (bbls.) | lb. | .24 | @ .25 |
| calcined, ex. light (bbls.) | lb. | .40 | @ |
| calcined, md. light (bbls.) | lb. | .15 | @ |
| calcined, heavy (bbls.) | lb. | .03½ | @ .06½ |
| Orange mineral A.A.A. | lb. | .13½ | @ |
| Rubber lead | lb. | .10 | @ |

### Accelerators, Organic

| | | | |
|---|---|---|---|
| A-7 | lb. | .75 | @ .85 |
| A-19 | lb. | .80 | @ .90 |
| Accelemal | lb. | .30 | @ |
| Accelerene (f. o. b. English port) | lb. | 13d. | @ |
| Aldehyde ammonia powder | lb. | .95 | @ |
| Aniline (f. o. b. factory) | lb. | .16½ | @ .17½ |
| sulphate | lb. | .33 | @ |
| Cryline | lb. | .60 | @ |
| Diphenylguanidine | lb. | 1.10 | @ 1.15 |
| Ethylidene aniline | lb. | .70 | @ .75 |
| Excellerex | lb. | .35 | @ .40 |
| Formaldehyde aniline | lb. | .42½ | @ |
| Hexamethylene tetramine | lb. | .85 | @ |
| Lead oleate (bbls.) | lb. | .15 | @ |
| Methylene aniline | lb. | .38 | @ .44 |
| No. 999 | lb. | .15½ | @ |
| Paraldehyde | lb. | .17 | @ .19 |
| Paraphenylene diamine | lb. | 1.40 | @ 1.50 |

*Nominal.

| | | | |
|---|---|---|---|
| Super-sulphur, No. 1 | lb. | $0.50 | @ $0.60 |
| No. 2 | lb. | .25 | @ .35 |
| Tuads (Tetramethyl thiuram-disulphide) | lb. | 6.00 | @ |
| Thiocarbanilide | lb. | .26 | @ .30 |
| Triphenylguanidine | lb. | .75 | @ |

### Acids

| | | | |
|---|---|---|---|
| Acetic 28% (bbls.) | cwt. | 3.38 | @ |
| glacial (carboys) | lb. | .16 | @ |
| Cresylic (95% straw color) | gal. | .65 | @ .70 |
| (95 dark) | gal. | .63 | @ .68 |
| Sulphuric, 66 degrees | lb. | .02 | @ |

### Alkalies

| | | | |
|---|---|---|---|
| Caustic soda | cwt. | 3.10 | @ 4.25 |
| flake, 76% (factory) | cwt. | 3.60 | @ 3.85 |
| solid, 76% (factory) | cwt. | 3.10 | @ |

### Colors

**BLACK**

| | | | |
|---|---|---|---|
| Aerfloted arrow | lb. | .07 | @ .10 |
| Bone | lb. | .05½ | @ .07½ |
| Carbon black | lb. | .11 | @ |
| compressed | lb. | .09 | @ .12 |
| Drop | lb. | .06 | @ .10 |
| Ivory black | lb. | .12 | @ .30 |
| Lampblack | lb. | .12 | @ |
| Micronex | lb. | .08 | @ |
| A. & W. Nonfli | lb. | .40 | @ |
| Shawinigan | lb. | .15 | @ .16 |
| Thermatomic Carbon (factory) | lb. | .04 | @ |

**BLUE**

| | | | |
|---|---|---|---|
| Cobalt | lb. | .21 | @ .26 |
| Gritless blue | lb. | 2.00 | @ 4.00 |
| Prussian | lb. | .40 | @ .50 |
| Ultramarine | lb. | .10 | @ .35 |

**BROWN**

| | | | |
|---|---|---|---|
| Iron oxide | lb. | .04½ | @ .06 |
| Sienna, Italian | lb. | .06½ | @ .07½ |
| Umber, Turkey | lb. | .05½ | @ .06 |

**GREEN**

| | | | |
|---|---|---|---|
| Chrome, light | lb. | $0.30 | @ $0.31 |
| medium | lb. | .32 | @ .35 |
| dark | lb. | .35 | @ .38 |
| commercial | lb. | .10 | @ .10½ |
| tile | lb. | .13 | @ .15 |
| Gritless green | lb. | 2.00 | @ 3.00 |
| Oxide of chromium | lb. | .36 | @ .51 |
| T. K. | lb. | .35 | @ |

**RED**

| | | | |
|---|---|---|---|
| Antimony, golden | lb. | .20 | @ .22 |
| golden T. K. | lb. | .22 | @ |
| golden R.M.P. No. 7 | lb. | .20 | @ |
| golden, 15/17% G. E. | lb. | .20 | @ .25 |
| golden, 15/17% F. S. | lb. | .18 | @ |
| golden, No. 1 | lb. | .30 | @ |
| golden, No. 2 | lb. | .20 | @ |
| Antimony, crimson | lb. | .40 | @ .42 |
| crimson T. K. | lb. | .47 | @ |
| crimson, 15/17% G. E. | lb. | .40 | @ .45 |
| crimson, 15/17% F. S. | lb. | .39 | @ |
| crimson, R.M.P. No. 3 | lb. | .48 | @ |
| crimson F. | lb. | .45 | @ |
| 7-A | lb. | .35 | @ |
| Z-2 | lb. | .18 | @ |
| Golden pentasulphide T. K. | lb. | .35 | @ |
| Vermilion, 5% F. S. | lb. | .65 | @ |
| Vermilion 15/17% F.S. | lb. | .50 | @ |
| Arsenic-sulphide, red | lb. | .14½ | @ |
| Gritless red (four shades) | lb. | 1.50 | @ 3.00 |
| purple | lb. | 2.00 | @ 3.00 |
| Indian maroon, English | lb. | .11 | @ |
| Iron oxide, domestic | lb. | .02½ | @ .05 |
| English | lb. | .11 | @ .13 |
| Indian | lb. | .08 | @ .12 |
| pure bright | lb. | .11 | @ .13 |
| reduced | lb. | .07 | @ .10 |
| Spanish | lb. | .02½ | @ .03¼ |
| Venetian | lb. | .02 | @ .05½ |
| Oximony | lb. | .13½ | @ |
| Pará toner | lb. | .95 | @ 1.00 |
| Toluidine toner | lb. | 1.95 | @ 2.25 |
| Vermilion, English | lb. | 1.35 | @ 1.50 |

### Colors—*Continued*

**WHITE**

| | | | |
|---|---|---|---|
| Akcolith | lb. | @ | |
| Albalith | lb. | $0.06½ @ | $0.06½ |
| Aluminum bronze | lb. | .55 @ | 1.25 |
| Lithofone | lb. | .06 @ | .06½ |
| Sterling | lb. | .06½ @ | .06½ |
| Azo | lb. | .06½ @ | .06½ |
| Imported | lb. | .05¾ @ | .06½ |
| Red seal, imported | lb. | .07 @ | .07¼ |
| T. O. Pigment | lb. | .07 @ | .07¼ |
| Zinc oxide: | | | |
| AAA, lead free | lb. | .08 @ | .08¼ |
| Azo (factory): | | | |
| ZZZ (lead free) | lb. | .08 @ | .08¼ |
| ZZ (—5% leaded) | lb. | .07½ @ | .07¾ |
| Z (8.10% leaded) | lb. | .07½ @ | .07¾ |
| French process, Florence brand | | | |
| Green seal | lb. | .11 @ | .11¼ |
| Red seal | lb. | .10 @ | .10¼ |
| U. S. P. | lb. | .16 @ | .18 |
| White seal | lb. | .12 @ | .12¼ |
| Horse Head brands | | | |
| Selected | lb. | .08½ @ | .08¼ |
| Special | lb. | .08½ @ | .08¾ |
| XX red | lb. | .08 @ | .08¼ |
| Leaded brands | | | |
| Lehigh | lb. | .07¼ @ | .07¾ |
| Standard | lb. | .07⅛ @ | .07¾ |
| Sterling | lb | .07⅛ @ | .07¾ |
| Superior | lb. | .07⅛ @ | .07¾ |
| Palmerton process | | | |
| Kadox, black | lb. | .10¾ @ | .11¼ |
| blue | lb. | .09⅞ @ | .10¼ |
| red | lb. | .08¾ @ | .09¼ |
| Snow white | lb. | .12 @ | |

**YELLOW**

| | | | |
|---|---|---|---|
| Arsenic | lb. | .75 @ | |
| Chrome | lb | .18 @ | .21 |
| Gritless yellow | lb. | 2.50 @ | 4.00 |
| India rubber | lb. | .75 @ | |
| Ochre, domestic | lb. | .01½ @ | .02 |
| imported | lb. | .02½ @ | .03 |

### Compounding Ingredients

| | | | |
|---|---|---|---|
| Aluminum flake (carloads) | ton | 29.00 @ | |
| filler | ton | 23.00 @ | |
| hydrate, light | lb. | .17 @ | .18 |
| Ammonia carbonate | lb. | .13 @ | .14½ |
| Asbestine | ton | 16.00 @ | 22.50 |
| Aluminum silicate | ton | 22.50 @ | 25.00 |
| Barium, carbonate | ton | 65.00 @ | 68.00 |
| dust | lb. | .05 @ | .06 |
| Barytes, imported | ton | 28.00 @ | 33.00 |
| pure white | ton | 23.90 @ | |
| O.C.X., off color | ton | 15.00 @ | |
| uniform floated | ton | 23.90 @ | |
| water ground and floated | ton | 23.00 @ | 26.00 |
| Basofor | lb. | .04¼ @ | |
| Blanc fixe | lb. | .04 @ | .04½ |
| Carrara filler (factory) | lb. | .01¾ @ | |
| Chalk, precip. extra light | lb. | .04¼ @ | .05 |
| heavy (f.o.b. factory) | lb. | .03¼ @ | .04 |
| Clay, Dixie | ton | 22.00 @ | 35.00 |
| Blue ribbon (carloads) | ton | 14.00 @ | |
| Blue Ridge | ton | 12.00 @ | 26.00 |
| Catalpo | ton | 38.00 @ | |
| China | lb. | .01½ @ | |
| China, L. H. B. | ton | 22.50 @ | |
| English, L. H. B. | lb. | .02½ @ | |
| Langley | ton | 18.00 @ | |
| Cotton flock, black | lb. | .12 @ | |
| light-colored | lb. | .12 @ | .13½ |
| white | lb. | .14½ @ | .23 |
| Cotton linters clean mill-run | lb. | .05¾ @ | |
| Fossil flour (powdered) | ton | 60.00 @ | |
| (bolted) | ton | 60.00 @ | |

* Nominal.

## Chemical Market—*Continued*

### New York Quotations

July 25, 1924

| | | | |
|---|---|---|---|
| Glue, high grade | lb. | $0.22 @ | $0.30 |
| medium | lb. | .20 @ | .26 |
| low grade | lb. | .15 @ | .18 |
| Graphite, flake | lb. | .06½ @ | .12 |
| Infusorial earth (powd.) | ton | 60.00 @ | |
| (bolted) | ton | 65.00 @ | |
| Lime (bolted) | lb. | .01½ @ | |
| Mica, amber | lb. | .05 @ | |
| powdered | lb. | *.15 @ | |
| white | lb. | .06 @ | |
| Pumice stone, powdered | lb. | .03 @ | .05 |
| Rotten st., powd. (bbls.) | lb. | .02½ @ | .04½ |
| Slate flour (factory) | ton | 25.00 @ | |
| Soap bark, cut | lb. | .09¼ @ | .09¾ |
| Soapstone | ton | 25.00 @ | |
| Sodium bicarbonate (bbls.) | lb. | .02½ @ | .02¾ |
| Starch, powd. corn (bags) | cwt. | 3.77 @ | 3.87 |
| (bbls.) | cwt. | 4.04 @ | 4.14 |
| Talc, soapstone | ton | 15.00 @ | 22.00 |
| Terra blanche | ton | 25.00 @ | 28.00 |
| Whiting, domestic | ton | 12.50 @ | |
| chalk | ton | 16.50 @ | 25.00 |
| commercial | ton | .90 @ | 1.00 |
| English, cliffstone | cwt. | 1.50 @ | 1.75 |
| Georgia calcite | ton | 12.00 @ | |
| gilders (bolted) | cwt. | 1.10 @ | 1.20 |
| K. T. | ton | @ | |
| Perfection | ton | 13.50 @ | 18.00 |
| Quaker | ton | 13.00 @ | 22.00 |
| Snowflake white | ton | 15.00 @ | |
| Superfine | ton | 12.50 @ | 22.50 |
| Sussex | ton | 8.00 @ | 16.00 |
| Witco | ton | 20.00 @ | |
| York | ton | 8.00 @ | |
| Wood pulp, XXX | ton | 35.00 @ | |
| X (f. o. b. factory) | ton | 25.00 @ | |

### Mineral Rubber

| | | | |
|---|---|---|---|
| Genasco (factory) | ton | 50.00 @ | 52.00 |
| Gilsonite | ton | 65.00 @ | |
| Granulated M. R. | ton | 40.00 @ | 60.00 |
| Hard hydrocarbon | ton | 31.00 @ | 50.00 |
| Liquid rubber | lb. | .10 @ | |
| Ohmlac Kapak, K-R | ton | 50.00 @ | 65.00 |
| K-4 | ton | 175.00 @ | |
| Soft hydrocarbon | ton | 30.00 @ | 50.00 |
| 320/340 M. P. hydrocarbon | ton | 45.00 @ | 50.00 |
| 300/310 M. P. hydrocarbon | ton | 40.00 @ | 45.00 |
| Pioneer, M. R., solid (fac.) | ton | 42.00 @ | 44.00 |
| M. R. granular | ton | 52.00 @ | 54.00 |
| Robertson, M. R., solid | ton | 35.00 @ | 75.00 |
| M. R. granular (factory) | ton | 42.00 @ | 80.00 |
| Rubrax (factory) | ton | 60.00 @ | |
| Synpro, gran. M. R. (fac.) | ton | 55.00 @ | |

### Resins and Pitches

| | | | |
|---|---|---|---|
| Tar, pine, retort | bbl. | 11.00 @ | |
| kiln | bbl. | 11.00 @ | |
| Pitch, Burgundy | lb. | .05 @ | |
| coal tar | bbl. | 8.00 @ | |
| Fluxol hardwood | lb. | .03 @ | .03½ |
| pine tar | bbl. | 6.00 @ | |
| ponto | lb. | .05 @ | |
| Rosin, K (bbl.) | 280 lbs. | 5.85 @ | |
| strained (bbl.) | 280 lbs. | 6.40 @ | |
| Shellac, fine orange | lb. | .75 @ | *.90 |
| substitute | gal. | 1.50 @ | |

### Softeners

| | | | |
|---|---|---|---|
| Avoilas compound | lb. | .13 @ | .15 |
| Castor, No. 1, U. S. P. | lb. | .17 @ | |
| No. 3, U. S. P. | lb. | .16½ @ | |
| Corn, crude (bbls.) | lb. | .13 @ | |
| Cotton, Summer yellow | lb. | .12½ @ | |
| Cyeline | gal. | .35 @ | .38 |
| Glycerine | lb. | $0.17 @ | $0.17½ |
| Linseed, raw | gal. | 1.00 @ | |
| Palm lagos | lb. | .09½ @ | |
| oil clarified | lb. | .09½ @ | |
| Palm, niger | lb. | .09 @ | |
| Parra M. R. flux | lb. | .06 @ | .07 |
| Peanut, crude | lb. | .12 @ | |
| refined | lb. | .14 @ | |
| Petrolatum, standard | lb. | .06 @ | .08 |
| Petrolatum, sticky | lb. | .08 @ | .10 |
| Pine, steam distilled | gal. | .68 @ | |
| Rapeseed, refined | gal. | .84 @ | |
| blown | gal. | 1.05 @ | |
| Rosin | gal. | .44 @ | |
| Synpro | gal. | @ | |
| Soya bean | lb. | .12¼ @ | .12½ |
| Tar | gal. | .26 @ | |
| Woburn | lb. | .05 @ | |

### Solvents

| | | | |
|---|---|---|---|
| Acetone (98.99% drums [6.62 lbs. per gal.]) | lb. | .16 @ | .17 |
| Benzol (90% drums [7.21 lbs. per gal.]) | gal. | .26 @ | .31 |
| pure (drums) | lb. | @ | |
| Carbon bisulphide (dms. [10.81 lbs. per gal.]) | lb. | .06½ @ | .07½ |
| tetrachloride (drums, [13.28 lbs. per gal.]) | lb. | .07 @ | .08 |
| Gasoline | | | |
| No. 303 | | | |
| Tankcars | gal. | .20 @ | |
| Drums, carlots | gal. | .23 @ | |
| Drums, less carlots | gal. | .26 @ | |
| Motor gasoline (steel bbls.) | gal. | .19 @ | |
| Naphtha, V. M. & P. | gal. | .19 @ | |
| solvent (drums extra) | gal. | .35 @ | |
| 68° Bé., 122°, 324° | gal. | .16½ @ | |
| 70° Bé., 114°, 314° | gal. | .17½ @ | |
| 71° Bé., 112°, 304° | gal. | .18½ @ | |
| Cymene (factory) | gal. | 2.00 @ | 2.50 |
| Toluol, pure (7.21 lbs. per gal.) | gal. | @ | |
| Turpentine, spirits | gal. | .84 @ | .85 |
| wood, steam distilled | gal. | .74 @ | .75 |

### Substitutes

| | | | |
|---|---|---|---|
| Black | lb. | .08 @ | .14 |
| Brown | lb. | .10 @ | .15 |
| White | lb. | .09 @ | .15 |
| Brown factice | lb. | .08 @ | .15 |
| White factice | lb. | .09 @ | .15 |

### Vulcanizing Ingredients

| | | | |
|---|---|---|---|
| Black hypo | lb. | .18 @ | |
| 13% F. S. | lb. | .20 @ | |
| Sulphur chloride | lb. | .04 @ | .05 |
| Sulphur, Bergenport brand, 100% pure (bbls.) | cwt. | 2.60 @ | 2.90 |
| (bags) | cwt. | 2.35 @ | 2.65 |
| Sulphur, Bklyn bd. (bbls.) | cwt. | 2.60 @ | 3.15 |
| superfine com. (bgs.) | cwt. | 2.00 @ | 2.50 |
| (bbls.) | cwt. | 2.40 @ | 2.90 |
| Rubber makers | lb. | .03 @ | .03½ |

(See also Colors—Antimony)

### Waxes

| | | | |
|---|---|---|---|
| Wax, beeswax, white, com. | lb. | .43 @ | .45 |
| ceresine, white | lb. | .10 @ | .11 |
| carnauba | lb. | .19 @ | .20 |
| montan | lb. | .06 @ | .06½ |
| ozokerite, black | lb. | .26 @ | .27 |
| green | lb. | .28 @ | .29 |

### Paraffin

| | | | |
|---|---|---|---|
| 122/124 white crude scale | lb. | .04¼ @ | |
| 124/126 white crude scale | lb. | .04¾ @ | |
| 120/122 fully refined | lb. | .05¼ @ | |
| 125/127 fully refined | lb. | .05½ @ | |

## "TIRE RATE BOOK" PURCHASED BY "TIRES"

Edward Lyman Bill, Inc., publisher of "Tires," 383 Madison Avenue, New York, N. Y., has taken over "The Tire Rate Book," the oldest periodical devoted exclusively to the interests of the tire industry. Under the new management the latter publication will retain its old name, but its scope will be considerably enlarged. The July issue will incorporate not only the complete listing of tire and rim sizes, but also directories of tire, tire accessory and service station equipment, manufacturers, statistical and general data concerning the tire industry and a complete record of balloon tire information.

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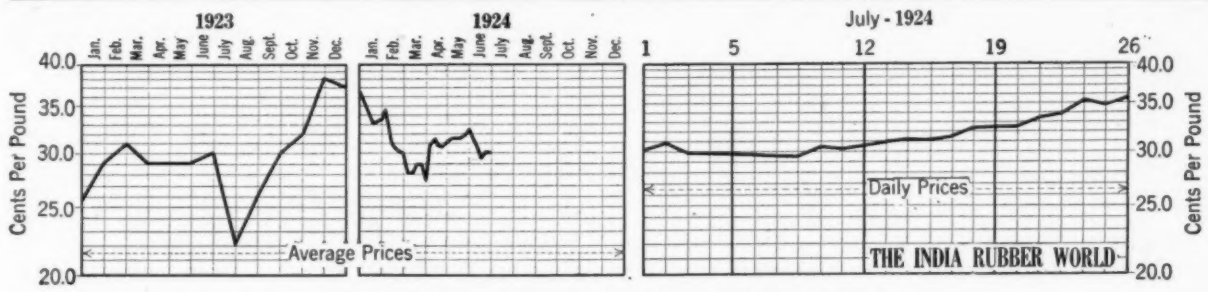
ACCORDING TO *Commerce Reports* THE UNITED STATES EXPORTS to Germany during 1922 of pneumatic casings for automobiles were valued at $10,761, the figure rising in 1923 to $52,551.

## N. T. D. A. TO HOLD CONVENTION IN AKRON

A convention in the interest of both tire dealer and manufacturer is to be held in Akron, Ohio, November 18-19-20, 1924, under the auspices of the National Tire Dealers' Association. A carefully planned program is being arranged, and all tire dealers, whether members of the association or not, are invited to attend this meeting, which promises to be of unusual interest.

## TIRE DEALERS' STOCKS DECREASING

Results obtained from the National Tire Dealers' Association's recent questionnaire have been satisfactory, the reports from twenty-six states showing a decided decrease in inventories of tires and tubes on hand. Members of the organization are now being requested to furnish information as to the number of tires on hand as of June 30, these reports to be checked with those of December 31, 1923, and March 31, 1924.




**Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton**

# The Market for Cotton and Other Fabrics

## New York

AMERICAN COTTON unofficial crop reports pointed to a condition on June 30 of 68.4 on the average and an indicated yield of 11,455,000 bales. Government end of June figures made an unexpectedly favorable showing, placing the acreage at 40,403,000, the condition at 71.2 and the indicated crop with average conditions hereafter at 12,144,000 bales. This report led to a selling movement reducing prices about two cents a pound.

The sensational feature of the month was the strong advance of the market on the unexpected reduction of the crop condition to 68.5 in the government report as of July 16. This figure was about three points under the expectations of the trade. Continuation of high temperatures and the need of rain in the Southwest justified the rapid increase in spot cotton prices after the middle of the month.

EGYPTIAN COTTON. Changes in Egyptian cotton prices since the decline that followed publication of the government report on American cotton were fractional and unimportant. The market for extra staples at present is extremely narrow. Spinners generally are awaiting definite information on the new crop. There is now a heavy discount on all new crop cottons, and nothing of importance is being done in spot cotton. Early in July Boston quotations for prompt delivery were: Medium Sakellaridis, 42 1/16 cents; Medium Uppers, 40¾ cents. Prices fell considerably to the middle of July; new crop Uppers were then quoted at 39½ cents and new crop Sakels at 39 cents. During the fourth week of July the advance of Egyptians was directly proportional to new crop futures.

The Bureau of Foreign and Domestic Commerce, Washington, D. C., reports imports of long staple cotton into the United States from Egypt during the month of May, 1924, as 2,244,340 pounds, valued at $851,548.

ARIZONA AND SEA ISLAND COTTONS. Domestic staple cottons failed to follow the advance in either upland spots or futures. This is attributed to the relatively large carryover and to a continued restricted demand. No. 2 Pimas are worth about 41 cents and average choice Sea Islands can be bought in small lots at about 40 cents.

## Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The demand for all of these fabrics for mechanical rubber goods, and boot and shoe manufacturing and for other purposes has shown steadily increasing demand and rising prices during the month. Good fall business is anticipated from the rubber trade because of depleted fabric inventories of rubber mills and recent improvement in most lines of rubber goods manufacturing.

SHEETINGS. Cotton goods prices are still much under the cost of production and so far the advance in the raw material has worked against the best interest of the mills. The market on sheeting is extremely active and very firm. Prices have advanced considerably, due in large measure to the advance in price of the raw material and also to the fact that buyers in general were holding off, waiting for lower prices. A fair amount of buying, principally of spot goods, has developed and a few large orders have been placed. The mills are unwilling to take orders for extended deliveries. Quotations are nominal as most mills have withdrawn prices owing to the rapid advance in cotton.

TIRE FABRICS. The market for tire fabrics has been generally quiet the past month. Production of tires during July and August proceeds on rather restricted schedules, developing but moderate activity for the fabric mills. Fabric demand, however, has been steady but with very limited profit to the mills. Most of the call reported is against cost plus contracts. One order of 200,000 pounds was placed for August delivery.

The past few days has developed considerable trade activity, when a stiffening in the raw cotton market brought about a certain amount of buying. Fabric dealers, however, have been unable to move up their prices in line with the advance in the raw market.

## New York Quotations

July 25, 1924

**Drills**

| | | |
|---|---|---|
| 38-inch 2.00-yard | yard | @ |
| 40-inch 3.47-yard | | @ |
| 52-inch 1.90-yard | | @ |
| 60-inch 1.52-yard | | @ |

**Duck**

CARRIAGE CLOTH

| | | |
|---|---|---|
| 38-inch 2.00-yard | yard | @ |
| 40-inch 1.47-yard | | @ |
| 72-inch 16.66-ounce | | @ |
| 72-inch 17.21-ounce | | @ |

MECHANICAL

| | | |
|---|---|---|
| Hose | pound | @ |
| Belting | | @ |

TENNIS

| | | |
|---|---|---|
| 52-inch 1.35 yard | yard | @ |

**Hollands**

DEAD FINISH

| | | |
|---|---|---|
| Standard, 36-inch | yard | .19½ @ |
| 41-inch | | .23½ @ |

FLAT FINISH

| | | |
|---|---|---|
| Imperial, 36-inch | | .15½ @ |
| 40-inch | | .17½ @ |

**Osnaburgs**

| | | |
|---|---|---|
| 40-inch 2.35-yard | yard | @ |
| 40-inch 2.48-yard | | @ |
| 40-inch 3.00-yard | | @ |
| 37-inch 2.42-yard | | @ |

**Raincoat Fabrics**

COTTON

| | | |
|---|---|---|
| Bombazine 64 x 60 | yard | $0.12½ @ |
| Bombazine 60 x 48 | | .11½ @ |
| Plaids 60 x 48 | | .12½ @ |
| Plaids 56 x 44 | | .12 @ |
| Surface prints 60 x 48 | | .13 @ |
| Surface prints 64 x 60 | | .14 @ |

**Sheetings, 40-inch**

| | | |
|---|---|---|
| 48 x 48, 2.50-yard | yard | .17 @ .17¼ |
| 48 x 48, 2.85-yard | | .15 @ .15¼ |
| 64 x 68, 3.15-yard | | @ |
| 56 x 60, 3.60-yard | | .12½ @ |
| 48 x 44, 3.75-yard | | .11½ @ .12 |

**Sheetings, 36-inch**

| | | |
|---|---|---|
| 48 x 48, 5.00-yard | yard | $0.09½ @ $0.09¾ |
| 40 x 40, 6.15-yard | | .08 @ |

**Tire Fabrics**

SQUARE WOVEN 17¼-ounce

| | | |
|---|---|---|
| Egyptian, karded | pound | $0.60 @ .63 |
| Peeler, karded | | .52 @ .54 |

CORD 23/5/3

| | | |
|---|---|---|
| Egyptian, combed | pound | .70 @ |
| Egyptian, karded | | .62 @ .65 |
| Peeler, combed | | .64 @ |
| Peeler, karded | | .53 @ .56 |

CORD 13/3/3

| | | |
|---|---|---|
| Peeler, karded | pound | .51 @ .54 |

LENO BREAKER

| | | |
|---|---|---|
| 8-oz. Peeler, karded | pound | .53 @ .55 |
| 10-oz. Peeler, karded | | .53 @ .55 |

CHAFER

| | | |
|---|---|---|
| 8.25-oz. Peeler, karded | pound | .62 @ |
| 9.5-oz. Peeler, karded | | .52 @ .54 |
| 12-oz. Peeler, karded | | .52 @ .54 |
| 14-oz. Peeler, karded | | .52 @ .54 |

# The Cotton Outlook

## American Cotton Crop Improves

THE WORLD needs a large crop of cotton this season and the United States is doing its best to meet that need. The May condition report was not encouraging but during the past month the growing cotton crop improved materially. Throughout the greater part of the growing area the weather during the last half of June and the first half of July was all that could be expected. Heavy rainfall was reported in certain sections of the eastern belt and drought in some sections of Texas. Absence of rain there, however, is welcome for the most part as it aids materially in checking weevil infestation. There appears to be occasion for optimism regarding the coming crop.

The condition of the crop as of June 25 was estimated as 71.2 per cent of normal, or a gain of 5.6 per cent over the estimate of May 25. This compares with 69.9 per cent a year ago and 74.8, the average on June 25 for the past ten years. For the first time this season the acreage and estimated production were given. The area planted to the staple this year is 40,403,000 acres, an increase of 1,702,000 acres or 4.4 per cent above last year's revised estimate, as compared with 34,016,000 acres in 1922 and 31,678,000 in 1921. On this basis a crop of 12,144,000 bales is forecast this year, or more than 2,000,000 bales greater than last year's final output.

## Better Business Ahead

The demand for raw cotton during the coming season is certain to be great, just how great depending largely on the importing ability of Europe. Although the financial situation of Germany is bad the political situation of Europe is now serene, and favorable results are expected to follow the probable adoption of the Dawes reparation report by England and France. The British textile industry has already shown some improvement, although the cotton market has been somewhat unsettled by the unexpectedly high American crop estimate. Practically all of the Lancashire mills using Egyptian cotton are running full time, whereas most of those in the American section are observing the curtailment schedule, running 26 hours a week, as against the regular 48 hours.

At home better business is anticipated after the autumn election, although a slightly better tone has already been noted because of the confidence restored by the strength and integrity of both the Republican and Democratic presidential nominees. Generally speaking, however, the textile goods markets continue dull in this between-season period, with retailers and the public buying from hand to mouth. Not until the approximate size of the coming cotton crop is more definitely established, however, is it expected that buyers of textile goods will buy very far ahead. More cotton is now said to be the greatest need of cotton mills, as small stocks have been chiefly responsible for prohibitive prices.

## British Cotton Growing Efforts

British cotton authorities believe that America is nearing its maximum effort toward expanding planted cotton area and the peak of possible production. Under existing conditions they anticipate a relatively high raw cotton price level for some time to come. With production outlook so unsatisfactory and American consumption of its own staple having increased during the past twenty years from 36 to 61 per cent they fear that Great Britain can no longer depend upon America for the great bulk of her cotton supply as in the past. The possibility of a very acute and prolonged shortage with serious consequences to the textile industry of Lancashire and Manchester therefore came up for serious discussion at the recent Textile Institute conference.

Great areas within the British Empire can be put under cotton to meet the emergency, and at the instance of the British Cotton Growing Association the British Government is encouraging and cooperating in every possible way with the plans of her various overseas Dominions for an adequate future supply of British-grown cotton. That these extensive plans for cultivating additional large acreages threaten the future demand for the American staple cannot be denied.

According to a recent review of the progress in the British colonies, rapid strides are being made in the Sudan region and an additional 10,000 acres are under cultivation there this year. The Makwar barrage, it is said, should be completed by this time next year, when water will be available to produce a crop of from 80,000 to 100,000 bales. The completion of the railway from Kassala to Thamian is expected to open up approximately 100,000 acres to the growth of cotton within the next decade.

In Nigeria, where cotton of the American type has been introduced, the possibilities are said to be great but depend largely upon transport facilities. New ginneries are being erected and if the scheme is successful it is expected that the government will provide the necessary railway transport in this district.

Excellent cotton is being produced in Queensland, Australia's premier cotton-growing state, but the quantity produced has been affected by drought. The Queensland and other state governments have done everything possible to encourage the cultivation of cotton by guaranteeing a fixed price for the seed over a number of years.

In the British West Indies the continued depression in the cotton trade has affected the demand for Sea Island cotton, the finest and longest staple in the world, which is used for lace making and very fine cotton fabrics. Nevertheless, both quality and quantity from this source were maintained during the past year.

Cotton growing within the British Empire, according to trade opinion, is thus firmly established, and the main problem is now one of transport rather than any other factor. It is pointed out that if the British have to wait until the colonies have sufficient funds of their own to find revenues to build railways, progress will be slow. It is therefore being urged that the Imperial Government come to the help of the colonies by guaranteeing the necessary funds.

## Long Staple Cotton

The demand for long staple cotton in the manufacture of thread, automobile tires and the higher grade of fabric has given such varieties an importance seemingly out of proportion to the amount produced. Altogether the total of long staple cotton having a fiber of 1⅛ inches or more in length which was produced throughout the world from the crop of 1922 did not in all probability exceed 2,150,000 bales or a little less than one-eighth of the world's total production of commercial cotton. The quantity of long staple cotton produced in Egypt last year was about 1,100,000 bales, and the quantity of Upland and American Egyptian cotton with a staple of 1⅛ inches or more in length which was produced in the United States from the crop of 1922 was approximately 800,000 bales. Long staple cotton is also produced in comparatively small quantities in India, Brazil, Peru and several other countries.

At one time long staple Sea Island cotton grown in the West Indies provided a large part of the total cotton used in Europe, and in the early days of the pneumatic tire industry was extensively used for tire duck, but the world's production of this variety at the present time is comparatively insignificant, being less than 20,000 bales. The United States Sea Island crop of 1922 amounted to only 5,125 running bales, equivalent to 3,820 bales at 500 pounds each, as compared with 117,559 running bales for the crop of 1916. This great falling off in production is due

to reduction in acreage on account of the ravages of the boll weevil.

During the year ended July 31, 1923, the United States imported 329,335 500-pound bales of Egyptian cotton. The production of cotton of Egyptian type, Pima variety, in the United States has now become an established industry in Arizona and to some extent in California, the crop of 1922 having been 32,824 bales.

Formerly a large part of the long staple Upland cotton produced in the United States was grown in the Mississippi Delta. With the increased demand for superior staple cotton efforts have been made in other sections of the cotton belt to grow improved varieties of Upland cotton. What success has attended these efforts cannot be accurately estimated until complete data of the production from the crops of 1922 is available.

### Cotton Notes

An embargo on cotton and cotton seed products from Arizona has been ordered by California on account of the boll weevil appearing in the Postvale section near Tucson. This announcement has given rubber manufacturers on the Coast some anxiety. The largest single user of Arizona cotton in the West is the Goodyear Tire & Rubber Co., which is interested in extensive plantations of Pima long staple cotton in the Salt River Valley section; but thus far there has been no interference with shipments of cotton from that section to its textile mills in Los Angeles, according to Secretary Lyon of the Goodyear company.

## Metal Market Review

### New York

Following the continued depression of the first half of July, there was some improvement during the last two weeks of the month in prices of copper, zinc, and tin, with lead quiet and comparatively unchanged. Foreign demand for copper in particular has increased, the movement being perhaps largely speculative. Orders for steel show a moderate advance.

ALUMINUM. The domestic situation shows no change, the market generally being quiet. Norway continues to ship to the United States good-sized tonnages of ingots.

ANTIMONY. The market remains quiet, with little demand for either spot or futures. Shipments from the Far East are offered at 6⅛ cents c. i. f. New York.

COPPER. During the third week of July an advance of 30 points was established in the export quotations of copper, while sales for domestic delivery were made at improved prices, with indications pointing to further advances in the near future. According to the New York *Times*: "Consumption of copper in the United States in the first six months of 1924 was 1,150,000,000 pounds, a new high record for any six months in the history of the industry. If this rate of consumption continues for the rest of the year it will be 10 per cent greater than the peak wartime consumption and 50 per cent greater than the pre-war peak of 2,225,000,000 pounds reported in 1913."

LEAD. Prices in New York are unchanged at 7 cents, although in the Middle West the market continues to improve. The chief demand appears to be from dealers and operators, who remain optimistic as to this metal.

NICKEL. Quotations on nickel are unchanged at 27 to 32 cents a pound for shot and ingot. Electrolytic nickel is held at 30 to 32 cents by leading producers.

STEEL. There is a slight gain in orders taken by the mills, but export business is very slow, and improvement in general is not looked for until the middle of August or early September. The *American Metal Market* says: "In the steel trade as a whole, the bookings since July 1 have probably averaged less than 25 per cent of capacity, with about 15 per cent of capacity engaged on old business. The official report of steel ingot production in June showed a tonnage equal to 47.4 per cent of estimated capacity."

TIN. In general the situation as regards this market is believed to be better, and American consumers are beginning to buy a little more largely. Imports into the United States of tin amounted in 1923 to 77,166 tons.

ZINC. Prices continue steady, with inquiries for both home and foreign consumption.

### Basic Metals

JULY 24, 1924

| | |
|---|---|
| Aluminum, virgin, 98@99 per cent | $26.50@$27.00 |
| Antimony, pound | .08¼ @ .08½ |
| Copper—Lake, spot, pound | .12⅝ @ .12¾ |
| Electrolytic, spot | .12½ @ |
| Casting refinery | .12¼ @ |
| Lead, spot, New York, pound | 7.00 @ |
| Lead, spot, East St. Louis | 6.80 @ 6.85 |
| Nickel, ingot, pound | .29 @ .32 |
| Tin, spot | .46⅜ @ |
| Zinc, spot, New York | 6.20 @ 6.25 |
| Zinc, spot, East St. Louis | 5.85 @ 5.90 |

### Steel Wire

"BASE PRICE" ON NO. 9 GAGE AND COARSE

| | Cents per pound |
|---|---|
| Bright basic | 4.25 @ 4.50 |
| Annealed soft | 4.50 @ 4.75 |
| Galvanized annealed | 5.15 @ 5.40 |
| Coppered basic | 5.15 @ 5.40 |
| Tinned soft Bessemer | 6.15 @ 6.40 |

*Regular extras for lighter gage.

### Copper Wire

| | F. O. B. Factory |
|---|---|
| Bare copper wire, lb. | *.15¼ @ |
| No. 6 B. & S. gage, lb. | *.15¼ @ |
| No. 8 B. & S. gage, lb. | *.15¼ @ |
| No. 14 B. & S. gage, lb. | *.16¼ @ |

*Base price.

### TIRE AND RIM ASSOCIATION REPORT OF RIMS INSPECTED AND APPROVED DURING JUNE, 1924

| Size | Number | Per Cent |
|---|---|---|
| **Clincher Rims** | | |
| 26 x 3 | 6,580 | 0.5 |
| 28 x 3 | 996 | 0.1 |
| 30 x 3 | 41,272 | 3.0 |
| 30 x 3½ | 628,816 | 45.5 |
| 31 x 4 | 27,565 | 2.0 |
| **Straightside Passenger** | | |
| 27 x 3½ | 550 | 0.0 |
| 28 x 3½ | 47,357 | 3.4 |
| 29 x 3½ | none | ... |
| 30 x 3½ | 108,615 | 7.8 |
| 32 x 3½ | 1,752 | 0.1 |
| 28 x 4 | 72,279 | 5.3 |
| 29 x 4 | 45,034 | 3.2 |
| 30 x 4 | 63,894 | 4.6 |
| 31 x 4 | none | ... |
| 32 x 4 | 102,282 | 7.4 |
| 33 x 4 | 2,363 | 0.2 |
| 34 x 4 | 305 | 0.0 |
| 29 x 4½ | 17,691 | 1.3 |
| 30 x 4½ | 45,911 | 3.4 |
| 31 x 4½ | 47,475 | 3.4 |
| 32 x 4½ | 78,996 | 5.7 |
| 34 x 4½ | 5,770 | 0.4 |
| 30 x 5 | 2,315 | 0.2 |
| 31 x 5 | 12,620 | 0.9 |
| 33 x 6 | 1,210 | 0.1 |
| **Truck Rims** | | |
| 30 x 5 | 5,821 | 0.4 |
| 34 x 5 | 4,551 | 0.3 |
| 32 x 6 | 3,557 | 0.3 |
| 36 x 6 | 2,400 | 0.2 |
| 34 x 7 | 877 | 0.1 |
| 38 x 7 | 1,101 | 0.1 |
| 36 x 8 | 918 | 0.1 |
| 40 x 8 | 833 | 0.1 |
| Totals | 1,381,756 | 100.0 |

THE PRINCIPAL CUSTOMERS IN MAY FOR AMERICAN-MADE AUTOMOBILE CASINGS WERE: England, taking goods valued at $248,246; Australia, $116,885; Cuba, $113,177; Japan, $96,608; Sweden, $93,330; and New Zealand, $91,016.

## Exports of India Rubber Manufactures from the

| EXPORTED TO | Belting Value | Hose Value | Packing Value | Thread Value | Boots Pairs | Boots Value | Shoes Pairs | Shoes Value | Canvas Shoes with Rubber Soles Pairs | Canvas Shoes with Rubber Soles Value | Soles and Heels Value | Waterproofed Auto Cloth Value | Waterproofed Clothing Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EUROPE | | | | | | | | | | | | | |
| Austria | ..... | $370 | $67 | ..... | 12 | $38 | 8,316 | $11,162 | ..... | ..... | ..... | ..... | ..... |
| Azores and Madeira Islands | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Belgium | $200 | 94 | ..... | $1,917 | 12 | 38 | 60 | 45 | ..... | ..... | $49 | $4,438 | ..... |
| Bulgaria | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Czechoslovakia | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Denmark | 3,210 | 224 | 647 | ..... | 72 | 382 | 870 | 1,638 | 12,509 | $8,673 | 415 | ..... | ..... |
| Finland | 2,444 | 292 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| France | 467 | 531 | 1,498 | 27,075 | 54 | 121 | 110 | 99 | ..... | ..... | ..... | 240 | ..... |
| Germany | 7,164 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 137 | $100 |
| Greece | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hungary | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Iceland and Faroe Islands | ..... | ..... | ..... | ..... | 285 | 663 | 1,190 | 1,676 | ..... | ..... | ..... | ..... | ..... |
| Italy | ..... | 216 | 500 | 4,754 | 7 | 28 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Latvia | 1,353 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Lithuania | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Malta, Goza and Cyprus Islands | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Netherlands | 3,648 | 572 | 760 | ..... | 1,002 | 2,001 | ..... | ..... | ..... | ..... | 181 | 225 | 570 |
| Norway | 43 | 281 | 261 | ..... | 918 | 2,396 | 823 | 1,188 | 387 | 943 | 396 | 456 | ..... |
| Poland and Danzig | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Portugal | ..... | 22 | ..... | ..... | ..... | ..... | 22 | 27 | ..... | ..... | 222 | ..... | ..... |
| Rumania | 21 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Russia in Europe | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Spain | 1,931 | 728 | ..... | ..... | 1 | 9 | ..... | ..... | ..... | ..... | 307 | 339 | ..... |
| Sweden | 2,353 | 594 | 263 | ..... | ..... | ..... | 2,976 | 6,022 | 387 | 943 | ..... | 564 | ..... |
| Switzerland | ..... | ..... | ..... | ..... | 23 | 77 | 48 | 45 | 1,107 | 879 | 16 | 121 | ..... |
| England | 10,378 | 20,824 | 2,480 | 23,597 | 4,795 | 14,592 | 15,530 | 7,661 | 15,462 | 12,655 | 4,094 | 8,503 | 563 |
| Scotland | 3,189 | 21 | 107 | ..... | 252 | 329 | ..... | ..... | ..... | ..... | ..... | 345 | ..... |
| Ireland | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Yugoslavia, Albania, etc | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| TOTALS | $36,401 | $24,769 | $6,583 | $57,343 | 7,433 | $20,677 | 29,945 | $29,563 | 29,852 | $24,093 | $5,680 | $15,368 | $1,233 |
| NORTH AMERICA | | | | | | | | | | | | | |
| Canada | $12,396 | $10,246 | $5,757 | $6,031 | 2,164 | $7,655 | 56 | $111 | 11,224 | $9,284 | $3,763 | $20,623 | $1,973 |
| British Honduras | 9 | 9 | ..... | ..... | ..... | ..... | ..... | ..... | 665 | 868 | ..... | ..... | 273 |
| Costa Rica | 145 | 429 | 175 | ..... | ..... | ..... | 48 | 22 | ..... | ..... | 1,174 | 59 | 321 |
| Guatemala | 2,916 | 614 | 68 | ..... | ..... | ..... | 1,000 | 870 | 3,267 | 2,681 | 2,046 | ..... | 2,292 |
| Honduras | 880 | 1,337 | 137 | ..... | ..... | ..... | 492 | 242 | 582 | 674 | 695 | ..... | 1,000 |
| Nicaragua | 902 | 141 | 173 | ..... | ..... | ..... | ..... | ..... | 628 | 639 | 560 | 305 | ..... |
| Panama | 147 | 4,202 | 1,215 | ..... | ..... | ..... | 1,775 | 1,299 | 8,713 | 6,858 | 17 | 436 | 257 |
| Salvador | ..... | 550 | 70 | ..... | ..... | ..... | 194 | 155 | 646 | 480 | 2,137 | ..... | 40 |
| Mexico | 41,257 | 21,740 | 9,154 | 502 | 18 | 64 | 1,017 | 746 | 45,473 | 43,045 | 27,120 | 5,264 | 38,902 |
| Miquelon and St. Pierre Islands | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 450 |
| Newfoundland and Labrador | 60 | 592 | 58 | ..... | 2,798 | 7,344 | ..... | ..... | 3,733 | 2,489 | 1,438 | ..... | 4,859 |
| Bermuda | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,641 | 1,544 | 123 | ..... | ..... |
| Barbados | ..... | 26 | ..... | ..... | ..... | ..... | ..... | ..... | 156 | 117 | ..... | ..... | ..... |
| Jamaica | ..... | 86 | 60 | ..... | ..... | ..... | ..... | ..... | 262 | 345 | 152 | 369 | ..... |
| Trinidad and Tobago | ..... | 398 | 187 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30 | 36 | 90 |
| Other British West Indies | ..... | 799 | 61 | ..... | ..... | ..... | ..... | ..... | 919 | 919 | ..... | ..... | ..... |
| Cuba | 4,419 | 21,739 | 6,088 | ..... | 72 | 216 | 9,304 | 6,491 | 79,837 | 54,555 | 6,208 | 4,866 | 49,661 |
| Dominican Republic | 512 | 1,061 | 2,461 | ..... | ..... | ..... | 36 | 45 | 5,633 | 4,587 | 472 | 423 | 430 |
| Dutch West Indies | 69 | ..... | 20 | ..... | ..... | ..... | 426 | 268 | 8,334 | 5,935 | 103 | 60 | 74 |
| French West Indies | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Haiti | 59 | 18 | ..... | ..... | ..... | ..... | ..... | ..... | 3,280 | 2,936 | 823 | ..... | 39 |
| Virgin Islands of United States | ..... | 175 | 102 | ..... | ..... | ..... | ..... | ..... | 684 | 704 | 149 | ..... | ..... |
| TOTALS | $63,771 | $64,162 | $25,786 | $6,533 | 5,052 | $15,279 | 14,348 | $10,249 | 175,677 | $138,660 | $47,010 | $32,441 | $100,661 |
| SOUTH AMERICA | | | | | | | | | | | | | |
| Argentina | $8,524 | $5,466 | $2,270 | $136 | 560 | $1,880 | 3,434 | $3,070 | 12,831 | $10,313 | $7,892 | $20,250 | $5,882 |
| Bolivia | 910 | 73 | 14 | ..... | ..... | ..... | ..... | ..... | 12 | 30 | ..... | ..... | ..... |
| Brazil | 9,892 | 5,527 | ..... | 1,300 | 30 | 285 | 4,685 | 2,869 | ..... | ..... | ..... | 3,051 | 342 |
| Chile | 35,642 | 10,388 | 2,214 | ..... | 616 | 3,969 | ..... | ..... | ..... | ..... | ..... | 3,981 | 2,014 |
| Colombia | 35 | 386 | 117 | ..... | ..... | ..... | 891 | 796 | 768 | 587 | 4,579 | 196 | 427 |
| Ecuador | 662 | 457 | 350 | ..... | ..... | ..... | ..... | ..... | 2,380 | 2,042 | ..... | 120 | ..... |
| British Guiana | 1,278 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Dutch Guiana | 6,430 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Paraguay | ..... | 473 | 68 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Peru | 4,254 | 1,180 | 915 | ..... | 229 | 1,322 | ..... | ..... | 240 | 251 | 75 | 1,365 | 9,704 |
| Uruguay | 2,630 | 13 | 363 | ..... | ..... | ..... | 1,200 | 1,503 | 2,473 | 2,567 | 144 | 701 | 2,847 |
| Venezuela | 2,505 | 724 | 1,560 | ..... | 4 | 40 | 270 | 208 | ..... | ..... | 2,522 | 110 | 668 |
| TOTALS | $72,762 | $24,687 | $7,871 | $1,436 | 1,559 | $7,496 | 10,480 | $8,446 | 18,704 | $15,790 | $15,212 | $29,774 | $21,884 |
| ASIA | | | | | | | | | | | | | |
| British India | $2,093 | $609 | $624 | ..... | ..... | ..... | 24 | $24 | 6,012 | $7,296 | ..... | $662 | ..... |
| Ceylon | 812 | 136 | 54 | ..... | ..... | ..... | 144 | 106 | 90 | 73 | ..... | 792 | ..... |
| Straits Settlements | ..... | 24 | ..... | ..... | ..... | ..... | ..... | ..... | 1,880 | 1,781 | ..... | 448 | ..... |
| China | 2,542 | 498 | 715 | $5,081 | 396 | $446 | 6,552 | 5,393 | ..... | ..... | ..... | 2,063 | $34 |
| Java and Madura | 828 | 1,261 | ..... | ..... | ..... | ..... | ..... | ..... | 2,640 | 2,477 | $144 | 307 | ..... |
| Other Dutch East Indies | 285 | 82 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 14 | ..... | ..... |
| Far Eastern Republic | ..... | 83 | 195 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hejaz, Arabia, etc | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Hongkong | ..... | ..... | ..... | ..... | 40 | 117 | ..... | ..... | 2,448 | 1,910 | 18 | 144 | ..... |
| Japan | 3,179 | 6,782 | 13,742 | 21,183 | 368 | 725 | 1,200 | 897 | 827 | 565 | ..... | 821 | 83 |
| Kwangtung, leased territory | ..... | 124 | ..... | ..... | ..... | ..... | 816 | 574 | ..... | ..... | ..... | ..... | ..... |
| Palestine and Syria | ..... | 36 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 188 | ..... |
| Persia | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 96 | 127 | ..... | ..... | ..... |
| Philippine Islands | 8,628 | 3,639 | 1,971 | ..... | 48 | 174 | ..... | ..... | 15,312 | 16,792 | 10,835 | 8,688 | 12,458 |
| Siam | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1,372 | 956 | ..... | ..... | ..... |
| TOTALS | $18,367 | $13,274 | $17,301 | $26,264 | 852 | $1,462 | 8,736 | $6,994 | 30,677 | $31,977 | $11,011 | $14,113 | $12,575 |

## United States by Countries During May, 1924

| Pneumatic Casings | | | Solid Tires | | Pneumatic Tubes | | | | Hard Rubber Goods | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Automobile | | | Automobile and Motor Truck | | Automobile | | | | | | | | | | |
| Number | Value | Others Value | Value | Others Value | Number | Value | Others Value | Tire Repair Materials Value | Battery Jars and Accessories Value | Other Electrical Supplies Value | Others Value | Rubber Water Bottles and Fountain Syringes Value | Other Druggists' Rubber Sundries Value | Pathing Caps Value | Rubber Toys, Balls and Balloons Value |
| 274 | $3,481 | $85 | ..... | ..... | 400 | $645 | $10 | $40 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 25 | 376 | ..... | ..... | ..... | 26 | 43 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1,604 | 30,321 | 184 | ..... | ..... | 970 | 2,610 | 36 | 866 | ..... | ..... | ..... | ..... | $255 | $261 | $60 |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 4 | 80 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 76 |
| 4,419 | 42,728 | ..... | $1,850 | ..... | 4,395 | 5,522 | 296 | 981 | ..... | ..... | ..... | ..... | 185 | 2,035 | 162 |
| 315 | 4,250 | ..... | ..... | ..... | 387 | 703 | 26 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 170 |
| 1,336 | 22,960 | 588 | ..... | ..... | 37 | 148 | ..... | 1,985 | ..... | ..... | $3,917 | $1,085 | 3,438 | 219 | 1,870 |
| 70 | 766 | 192 | ..... | ..... | 20 | 46 | 59 | ..... | ..... | ..... | ..... | ..... | 385 | ..... | 1,642 |
| 249 | 3,475 | ..... | 3,044 | ..... | 442 | 734 | ..... | 470 | $27 | ..... | ..... | ..... | ..... | ..... | ..... |
| 162 | 2,181 | ..... | ..... | ..... | 225 | 401 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 1,203 | 11,236 | 460 | 124 | ..... | 619 | 1,037 | 487 | ..... | ..... | ..... | ..... | 928 | 481 | ..... | ..... |
| 30 | 515 | 81 | ..... | ..... | 60 | 110 | 14 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 3 | 33 | ..... | ..... | ..... | 12 | 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 43 |
| 1,149 | 13,981 | 932 | ..... | ..... | 606 | 1,042 | 126 | 167 | ..... | ..... | 307 | ..... | 441 | 2,235 | 7,622 |
| 1,483 | 26,964 | 452 | 6,608 | ..... | 532 | 1,015 | 78 | 333 | 114 | ..... | ..... | ..... | 44 | 187 | ..... |
| 28 | 462 | ..... | ..... | ..... | 10 | 11 | 250 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 656 | 8,509 | 78 | ..... | ..... | 722 | 1,210 | ..... | 234 | 42 | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | 784 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 4 | 100 | ..... | ..... | ..... | 16 | 41 | ..... | ..... | ..... | $215 | ..... | ..... | ..... | ..... | ..... |
| 19 | 1,063 | ..... | 4,553 | $38 | 10 | 65 | ..... | 226 | ..... | 27 | 74 | 79 | 375 | 476 | 200 |
| 7,546 | 93,330 | 602 | 1,216 | ..... | 5,347 | 10,106 | 130 | 1,092 | ..... | ..... | ..... | ..... | 563 | 99 | 2,386 |
| 178 | 8,098 | ..... | ..... | ..... | 167 | 743 | ..... | ..... | ..... | ..... | 2,659 | 112 | 185 | 252 | ..... |
| 20,482 | 248,246 | 2,314 | 83,676 | ..... | 10,564 | 21,892 | 626 | 3,121 | ..... | 8 | 16,597 | 1,426 | 22,107 | 9,057 | 38,134 |
| 243 | 2,133 | ..... | 4,438 | ..... | 207 | 243 | ..... | ..... | ..... | ..... | ..... | ..... | 767 | 54 | 3,584 |
| 160 | 1,154 | ..... | ..... | ..... | 340 | 387 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 92 | ..... |
| 105 | 11,543 | ..... | ..... | ..... | 90 | 154 | ..... | 130 | ..... | ..... | ..... | ..... | ..... | ..... | 76 |
| 41,752 | $537,985 | $5,968 | $106,293 | $38 | 26,204 | $48,923 | $2,138 | $9,645 | $183 | $250 | $23,554 | $3,630 | $29,226 | $14,967 | $56,025 |
| 7,290 | $73,621 | $245 | $4,902 | $306 | 3,937 | $14,657 | $242 | $7,500 | $3,681 | $1,857 | $17,762 | $534 | $14,491 | $7,637 | $13,945 |
| 18 | 188 | ..... | ..... | ..... | 16 | 19 | ..... | ..... | ..... | ..... | ..... | ..... | 3 | ..... | ..... |
| 43 | 691 | ..... | ..... | ..... | 52 | 169 | ..... | ..... | 1,006 | ..... | ..... | 41 | 86 | ..... | ..... |
| 292 | 3,345 | ..... | 43 | 272 | 223 | 640 | ..... | ..... | ..... | ..... | ..... | 18 | 387 | ..... | 1,495 |
| 139 | 2,626 | ..... | 786 | ..... | 143 | 294 | ..... | 6 | ..... | ..... | 81 | $2 | 242 | 2 | 21 |
| 10 | 143 | ..... | ..... | 86 | 94 | 170 | ..... | ..... | ..... | ..... | 20 | 80 | 5 | ..... | ..... |
| 1,201 | 14,183 | 280 | 1,443 | 156 | 562 | 1,077 | 31 | 230 | ..... | ..... | 18 | ..... | 383 | 10 | 115 |
| 83 | 1,481 | ..... | ..... | ..... | 199 | 473 | ..... | ..... | ..... | ..... | ..... | ..... | 69 | ..... | 524 |
| 6,271 | 74,022 | 1,211 | 3,238 | 730 | 6,853 | 12,157 | 175 | 2,470 | 12 | 320 | 6,322 | 902 | 3,034 | 419 | 2,691 |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 333 | 3,863 | 25 | ..... | 581 | 346 | 615 | 4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 12 | ..... | ..... | ..... | ..... | 34 | ..... | ..... |
| 22 | 288 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 45 | ..... | ..... |
| 289 | 3,408 | 56 | 1,003 | 206 | 40 | 85 | 7 | 304 | ..... | ..... | 38 | 51 | ..... | ..... | ..... |
| 51 | 1,003 | ..... | 68 | ..... | 16 | 62 | ..... | 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 196 | 1,818 | 188 | 35 | 46 | 229 | 370 | ..... | 138 | ..... | ..... | 72 | ..... | ..... | ..... | 36 |
| 8,468 | 113,177 | 2,213 | 22,103 | 740 | 17,241 | 29,416 | 66 | 4,353 | 232 | 20 | 346 | 1,298 | 5,412 | 415 | 4,363 |
| 1,348 | 12,912 | 160 | 3,885 | ..... | 1,769 | 2,936 | ..... | ..... | ..... | ..... | 15 | ..... | 270 | 52 | 246 |
| 276 | 2,551 | ..... | 29 | ..... | 256 | 406 | ..... | 29 | ..... | ..... | 32 | ..... | ..... | ..... | ..... |
| 210 | 2,064 | 11 | 145 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 87 | 1,145 | ..... | ..... | 59 | 133 | 220 | ..... | 52 | ..... | ..... | ..... | ..... | 29 | ..... | ..... |
| 40 | 442 | ..... | ..... | ..... | 46 | 88 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 26,667 | $312,971 | $4,389 | $37,680 | $3,182 | 32,255 | $63,854 | $525 | $15,105 | $4,931 | $2,197 | $24,706 | $3,006 | $24,490 | $8,535 | $23,436 |
| 6,059 | $84,186 | ..... | $11,919 | $2,842 | 4,238 | $10,679 | ..... | $5,589 | ..... | ..... | $184 | $1,132 | $2,663 | ..... | $459 |
| 22 | 233 | ..... | 362 | ..... | 36 | 85 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 110 |
| 2,042 | 18,244 | $40 | 6,162 | 245 | 1,648 | 1,927 | ..... | 364 | ..... | ..... | 1,871 | 115 | 1,052 | $103 | 782 |
| 1,976 | 32,593 | ..... | 130 | 566 | 1,123 | 2,475 | $118 | 255 | ..... | ..... | ..... | ..... | 343 | ..... | 343 |
| 719 | 10,816 | 65 | 3,520 | 522 | 1,381 | 2,416 | ..... | 259 | ..... | $103 | 8 | 170 | 818 | 90 | 853 |
| 147 | 1,749 | ..... | ..... | ..... | 101 | 136 | ..... | 41 | ..... | 24 | ..... | 10 | 83 | ..... | 260 |
| ..... | ..... | ..... | 177 | ..... | ..... | ..... | ..... | ..... | ..... | 20 | ..... | ..... | ..... | ..... | 89 |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 110 | 807 | ..... | ..... | ..... | 150 | 185 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 2,422 | 40,085 | ..... | 3,254 | ..... | 1,401 | 3,748 | ..... | 316 | ..... | 11 | 198 | 39 | 430 | ..... | 1,355 |
| 1,188 | 12,344 | ..... | 288 | ..... | 691 | 1,002 | ..... | 1,172 | ..... | ..... | 49 | 454 | 390 | ..... | 220 |
| 884 | 13,785 | ..... | 220 | 256 | 1,192 | 2,697 | ..... | 89 | ..... | 1,095 | 2,205 | 330 | 353 | ..... | 198 |
| 15,569 | $214,842 | $105 | $26,032 | $4,431 | 11,961 | $25,350 | $118 | $8,085 | ..... | $1,253 | $4,515 | $2,250 | $6,132 | $193 | $4,669 |
| 909 | $9,259 | $56 | $4,120 | $14,853 | 536 | $794 | $15 | $2,783 | ..... | ..... | ..... | $549 | $435 | ..... | $1,683 |
| 354 | 4,557 | ..... | 769 | ..... | 220 | 378 | ..... | 46 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 3,300 | 31,346 | 80 | 1,968 | ..... | 1,604 | 2,366 | 10 | ..... | ..... | ..... | ..... | 220 | ..... | ..... | 73 |
| 134 | 1,820 | 78 | 172 | ..... | 26 | 79 | 6 | 267 | $41 | ..... | $48 | 88 | 1,063 | $769 | 300 |
| 1,275 | 12,199 | 101 | 2,378 | 3,532 | 306 | 729 | 6 | 175 | ..... | ..... | ..... | 22 | 95 | ..... | 242 |
| 177 | 2,359 | ..... | 1,240 | 805 | 61 | 87 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 95 |
| 212 | 2,363 | 70 | ..... | ..... | 117 | 213 | ..... | ..... | 53 | ..... | ..... | 142 | 102 | 249 | ..... |
| 9,440 | 96,608 | ..... | 7,836 | ..... | 7,852 | 13,781 | ..... | 758 | 70 | $1,215 | 3,990 | 135 | 1,290 | 3,110 | ..... |
| 8 | 158 | ..... | 197 | ..... | 8 | 18 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 278 | ..... |
| 253 | 4,680 | ..... | ..... | ..... | 383 | 679 | ..... | 314 | ..... | ..... | ..... | ..... | ..... | 18 | 108 |
| ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 6,609 | 80,775 | 2,229 | 17,571 | 12,187 | 4,799 | 9,521 | 841 | 1,176 | ..... | ..... | 2,048 | 951 | 1,082 | ..... | ..... |
| 94 | 684 | ..... | 120 | ..... | 138 | 418 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| 22,765 | $246,808 | $2,614 | $36,377 | $31,377 | 16,050 | $29,063 | $878 | $5,519 | $164 | $1,215 | $6,086 | $2,107 | $4,067 | $4,424 | $2,501 |

## Exports of India Rubber Manufactures from the

| | Belting Value | Hose Value | Packing Value | Thread Value | Boots Pairs | Boots Value | Shoes Pairs | Shoes Value | Canvas Shoes with Rubber Soles Pairs | Canvas Shoes with Rubber Soles Value | Soles and Heels Value | Waterproofed Auto Cloth Value | Waterproofed Clothing Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCEANIA | | | | | | | | | | | | | |
| Australia | $10,072 | $2,235 | $2,724 | ..... | ..... | ..... | 1,025 | $548 | 2,048 | $1,819 | ..... | $10,783 | $259 |
| British Oceania | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 288 | 277 | ..... | ..... | ..... |
| French Oceania | ..... | 15 | ..... | ..... | ..... | ..... | ..... | ..... | 1,825 | 1,742 | ..... | ..... | ..... |
| New Zealand | 2,734 | 1,071 | 2,134 | ..... | 154 | $595 | ..... | ..... | ..... | ..... | ..... | 662 | ..... |
| Other Oceania | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 226 | 253 | ..... | 72 | 20 |
| TOTALS | $12,806 | $3,321 | $4,858 | ..... | 154 | $595 | 1,025 | $548 | 4,387 | $4,091 | ..... | $11,517 | $279 |
| AFRICA | | | | | | | | | | | | | |
| British West Africa | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 36 | $45 | ..... | ..... | ..... |
| British South Africa | $23,724 | $16,670 | $2,769 | ..... | 228 | 1,098 | ..... | ..... | 2,371 | 2,296 | $1,016 | $1,790 | $1,986 |
| British East Africa | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Canary Islands | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Egypt | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 706 | ..... |
| Algeria and Tunis | ..... | 76 | 31 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Other French Africa | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Liberia | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Portuguese East Africa | ..... | ..... | 290 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 171 | ..... | ..... |
| Other Portuguese Africa | ..... | ..... | ..... | ..... | 2 | 6 | 2 | 3 | ..... | ..... | ..... | ..... | ..... |
| TOTALS | $23,724 | $16,746 | $3,090 | ..... | 230 | $1,104 | 2 | $3 | 2,407 | $2,341 | $1,187 | $2,496 | $1,986 |
| GRAND TOTALS | $227,831 | $146,959 | $65,489 | $91,576 | 15,280 | $46,613 | 64,536 | $55,803 | 261,704 | $216,952 | $80,100 | $105,709 | $138,618 |

# Rubber Statistics for the Dominion of Canada

## Imports of Crude and Manufactured Rubber

| | April, 1923 Pounds | April, 1923 Value | April, 1924 Pounds | April, 1924 Value |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Rubber, gutta percha, etc., | | | | |
| From United Kingdom | 1,393,471 | $480,974 | 1,452,623 | $403,832 |
| United States | 1,729,928 | 508,980 | 1,488,452 | 380,092 |
| Belgium | ..... | ..... | ..... | ..... |
| Brazil | ..... | ..... | ..... | ..... |
| British East Indies | ..... | ..... | ..... | ..... |
| Ceylon | ..... | ..... | ..... | ..... |
| Straits Settlements | 1,180,438 | 389,673 | 179,200 | 35,870 |
| Dutch East Indies | ..... | ..... | ..... | ..... |
| France | ..... | ..... | ..... | ..... |
| Netherlands | 112,146 | 26,599 | ..... | ..... |
| Other countries | 3,906 | 937 | ..... | ..... |
| Totals | 4,419,889 | $1,407,163 | 3,120,275 | $819,794 |
| Rubber recovered | 291,807 | 25,607 | 298,988 | 27,183 |
| Rubber powdered and rubber or gutta percha scrap | 767,594 | 29,149 | 496,155 | 17,393 |
| Balata | 1,095 | 976 | ..... | ..... |
| Rubber substitutes | 38,542 | 7,476 | 159,889 | 48,867 |
| Totals | 1,099,038 | $63,208 | 955,032 | $93,443 |
| PARTLY MANUFACTURED | | | | |
| Hard rubber sheets and rods | 2,170 | 1,558 | 7,820 | 5,736 |
| Hard rubber tubes | ..... | 2,005 | ..... | ..... |
| Rubber thread, not covered | 4,249 | 5,152 | 4,891 | 5,241 |
| Totals | 6,419 | $8,715 | 12,711 | $10,977 |
| MANUFACTURED | | | | |
| Belting | ..... | 12,102 | ..... | 9,294 |
| Hose | ..... | 7,072 | ..... | 8,014 |
| Packing | ..... | 2,918 | ..... | 4,606 |
| Boots and shoes, *pairs* | 3,314 | 8,372 | 6,482 | 8,883 |
| Clothing, including waterproofed | ..... | 18,304 | ..... | 17,059 |
| Gloves | ..... | 1,885 | ..... | 1,192 |
| Hot water bottles | ..... | 3,638 | ..... | 520 |
| Tires, solid, *number* | 1,012 | 24,427 | 496 | 15,541 |
| Tires, pneumatic, *number* | 7,118 | 83,858 | 6,303 | 87,769 |
| Inner tubes, *number* | 3,476 | 5,813 | 3,316 | 9,223 |
| Elastic, round or flat | ..... | 34,476 | ..... | 16,786 |
| Mats and matting | ..... | 1,249 | ..... | 3,067 |
| Cement | ..... | 4,651 | ..... | 2,052 |
| Other rubber manufactures | ..... | 147,556 | ..... | 147,000 |
| Totals | ..... | $356,321 | ..... | $331,006 |
| Total rubber imports | ..... | $1,835,407 | ..... | $1,255,220 |

## Exports of Domestic and Foreign Rubber Goods

| | April, 1923 Produce of Canada Value | April, 1923 Re-exports of Foreign Goods Value | April, 1924 Produce of Canada Value | April, 1924 Re-exports of Foreign Goods Value |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Crude and waste rubber | $5,095 | ..... | $5,515 | ..... |
| Totals | $5,095 | ..... | $5,515 | ..... |
| MANUFACTURED | | | | |
| Belting | 5,244 | ..... | 25,859 | ..... |
| Canvas shoes with rubber soles | 92,744 | ..... | 128,029 | ..... |
| Boots and shoes | 8,380 | ..... | 26,807 | ..... |
| Clothing, including waterproofed | 1,981 | ..... | 3,692 | ..... |
| Hose | 5,473 | ..... | 8,240 | ..... |
| Tires, casings | 468,999 | ..... | 327,676 | ..... |
| Inner tubes | 48,007 | ..... | 59,845 | ..... |
| Pneumatic | ..... | ..... | ..... | ..... |
| Solid | 2,585 | ..... | 14,928 | ..... |
| Vehicle | ..... | ..... | ..... | ..... |
| Other rubber manufactures | 13,262 | $2,396 | 17,764 | $1,279 |
| Totals | $646,675 | $2,396 | $612,840 | $1,279 |
| Total rubber exports | $651,770 | $2,396 | $618,355 | $1,279 |

## Imports of Crude Rubber Into the United States by Customs Districts

| | May, 1923 Pounds | May, 1923 Value | May, 1924 Pounds | May, 1924 Value |
|---|---|---|---|---|
| Massachusetts | 1,754,223 | $560,590 | 1,114,064 | $265,106 |
| Buffalo | ..... | ..... | 26,036 | 4,436 |
| New York | 77,596,982 | 24,153,131 | 57,124,628 | 13,153,393 |
| Philadelphia | ..... | ..... | 971,760 | 216,871 |
| Maryland | 537,750 | 158,420 | 2,081,530 | 469,951 |
| Los Angeles | 50,268 | 18,288 | 671,266 | 152,133 |
| San Francisco | 78,400 | 30,543 | 122,072 | 28,741 |
| Oregon | ..... | ..... | 56,000 | 13,628 |
| Colorado | 89,824 | 32,250 | ..... | ..... |
| Totals | 80,107,447 | $24,953,222 | 62,167,356 | $14,304,259 |

## United States Crude and Waste Rubber Imports for 1924 (By Months)

| | Plantations | Parás | Africans | Centrals | Guayule | Manigoba and Matto Gresso | Total 1924 | Total 1923 | Balata | Miscellaneous | Waste |
|---|---|---|---|---|---|---|---|---|---|---|---|
| January, *tons* | 20,611 | 731 | 181 | 88 | ..... | ..... | 21,611 | 31,197 | 23 | 249 | 95 |
| February | 29,977 | 1,501 | 192 | 93 | ..... | ..... | 31,763 | 24,220 | 47 | 799 | 53 |
| March | 16,009 | 980 | 663 | 33 | 67 | ..... | 17,752 | 33,916 | 86 | 98 | 184 |
| April | 41,438 | 686 | 139 | 9 | 164 | ..... | 42,436 | 31,588 | 55 | 1,371 | 114 |
| May | 22,466 | 1,176 | 70 | 17 | 185 | ..... | 23,914 | 36,184½ | 55 | 139 | 104 |
| June | 17,810 | 737 | 46 | 115 | 132 | ..... | 18,840 | 32,934 | 15 | 796 | 10 |
| Totals, 6 months, 1924, *tons* | 148,311 | 5,811 | 1,291 | 355 | 548 | ..... | 156,316 | ..... | 281 | 3,452 | 560 |
| Totals, 6 months, 1923 | 178,947 | 7,888 | 2,617 | 269 | 309 | 9½ | ..... | 190,039½ | 336 | 4,130 | 3,097 |

*Compiled from Rubber Association statistics.*

## United States by Countries During May, 1924—*Continued*

| | Pneumatic Casings | | | Solid Tires | | Pneumatic Tubes | | | | Hard Rubber Goods | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Automobile | | | Automobile and Motor Truck | | Automobile | | | | Battery Jars and Accessories | Other Electrical Supplies | | Rubber Water Bottles and Fountain Syringes | Other Druggists' Rubber Sundries | Packing Caps | Rubber Toys, Balls and Balloons |
| | Number | Value | Others Value | Value | Others Value | Number | Value | Others Value | Tire Repair Materials Value | Value | Value | Others Value | Value | Value | Value | Value |
| | 7,918 | $116,885 | $740 | $15,959 | ..... | 2,844 | $8,021 | ..... | $2,608 | $1,771 | ..... | $624 | $241 | $3,011 | $163 | $1,879 |
| | ..... | ..... | ..... | 394 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | 82 | 927 | ..... | ..... | $155 | 87 | 210 | ..... | 87 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | 6,117 | 91,016 | 100 | 16,149 | 196 | 2,431 | 6,597 | ..... | 822 | ..... | ..... | ..... | 136 | 905 | ..... | 992 |
| | 50 | 535 | ..... | ..... | ..... | 96 | 179 | $12 | 15 | ..... | ..... | ..... | ..... | ..... | ..... | 13 |
| | 14,167 | $209,363 | $840 | $32,502 | $351 | 5,458 | $15,007 | $12 | $3,532 | $1,771 | ..... | $624 | $377 | $3,916 | $163 | $2,884 |
| | 50 | $882 | ..... | ..... | ..... | 50 | $107 | ..... | $38 | ..... | ..... | ..... | $45 | ..... | ..... | ..... |
| | 3,350 | 42,530 | $147 | 5,695 | ..... | 1,696 | 3,613 | $18 | 3,429 | ..... | ..... | ..... | 753 | $430 | $385 | $1,074 |
| | 358 | 3,832 | ..... | 756 | ..... | 405 | 613 | 40 | 390 | ..... | ..... | $34 | ..... | ..... | ..... | 58 |
| | 225 | 2,993 | ..... | 2,600 | ..... | 194 | 248 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 39 |
| | 142 | 1,308 | ..... | 689 | ..... | 70 | 108 | 4 | 25 | ..... | ..... | ..... | ..... | 274 | ..... | 48 |
| | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | 8 | 73 | ..... | ..... | ..... | 8 | 12 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | ..... | ..... | ..... | ..... | ..... | 250 | 272 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | 16 | 232 | ..... | ..... | ..... | 16 | 30 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | 51 | 916 | ..... | ..... | ..... | 65 | 100 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| | 4,200 | $52,766 | $147 | $9,740 | ..... | 2,754 | $5,103 | $62 | $3,882 | ..... | ..... | $34 | $798 | $704 | $385 | $1,219 |
| | 125,120 | $1,574,735 | $14,063 | $248,624 | $39,379 | 94,682 | $187,300 | $3,733 | $45,768 | $7,049 | $4,915 | $59,519 | $12,168 | $68,535 | $28,667 | $90,734 |

# United Kingdom Rubber Statistics

### Imports

| | May, 1923 | | May, 1924 | |
|---|---|---|---|---|
| | Pounds | Value | Pounds | Value |
| UNMANUFACTURED | | | | |
| Crude rubber | | | | |
| From— | | | | |
| Straits Settlements | 3,849,200 | £242,777 | 4,419,800 | £234,220 |
| Federated Malay States | 2,861,100 | 175,723 | 1,817,600 | 94,939 |
| British India | 351,800 | 22,849 | 744,000 | 38,936 |
| Ceylon and Dependencies | 811,400 | 51,368 | 1,220,500 | 63,960 |
| Other Dutch Possessions in Indian Seas | 87,500 | 5,342 | 241,100 | 11,976 |
| Dutch East Indies (except other Dutch Possessions in Indian Seas) | 951,600 | 62,365 | 1,360,400 | 68,258 |
| Other countries in East Indies and Pacific, not elsewhere specified | 106,600 | 7,560 | 71,700 | 3,943 |
| Brazil | 433,100 | 25,814 | 472,400 | 22,572 |
| Peru | 27,700 | 1,470 | ..... | ..... |
| South and Central America (except Brazil and Peru) | 26,800 | 1,556 | 4,500 | 220 |
| West Africa: | | | | |
| French West Africa | 98,900 | 4,895 | 107,500 | 4,132 |
| Gold Coast | 7,000 | 307 | 9,400 | 424 |
| Other parts of West Africa | 67,300 | 2,568 | 66,500 | 2,734 |
| East Africa, including Madagascar | 44,800 | 3,272 | 80,000 | 3,921 |
| Other countries | 41,800 | 2,395 | 120,700 | 5,072 |
| Totals | 9,766,600 | £610,261 | 10,736,100 | £555,307 |
| Waste and reclaimed rubber | 232,400 | 3,520 | 520,900 | 5,597 |
| Gutta percha and balata | 935,900 | 112,474 | 981,100 | 117,161 |
| Rubber substitutes | 33,600 | 620 | ..... | ..... |
| Totals | 10,968,500 | £726,875 | 12,238,100 | £678,065 |
| MANUFACTURED | | | | |
| Boots and shoes....*doz. pairs* | 18,280 | £30,561 | 30,967 | £58,093 |
| Tires and tubes | | | | |
| Pneumatic | | | | |
| Outer covers | ..... | 335,541 | ..... | 202,578 |
| Inner tubes | ..... | 49,446 | ..... | 30,037 |
| Solid tires | ..... | 15,311 | ..... | 30,422 |
| Other rubber manufactures | ..... | 100,191 | ..... | 126,865 |
| Totals | ..... | £531,050 | ..... | £447,995 |

### Exports

| | | | | |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Waste and reclaimed rubber | 1,191,600 | £11,015 | 836,500 | £9,143 |
| Rubber substitutes | 120,400 | 2,675 | 154,700 | 3,523 |
| Totals | 1,312,000 | £13,690 | 991,200 | £12,666 |
| MANUFACTURED | | | | |
| Boots and shoes....*doz. pairs* | 20,792 | £29,236 | 17,912 | £30,606 |
| Tires and tubes | | | | |
| Pneumatic | | | | |
| Outer covers | ..... | 166,013 | ..... | 181,926 |
| Inner tubes | ..... | 28,017 | ..... | 39,910 |
| Solid tires | ..... | 27,464 | ..... | 35,010 |
| Other rubber manufactures | ..... | 265,615 | ..... | 303,494 |
| Totals | ..... | £516,345 | ..... | £590,946 |

### Exports—Colonial and Foreign

| | May, 1923 | | May, 1924 | |
|---|---|---|---|---|
| | Pounds | Value | Pounds | Value |
| UNMANUFACTURED | | | | |
| Crude rubber | | | | |
| To— | | | | |
| Russia | 879,700 | £53,630 | ..... | ..... |
| Sweden, Norway and Denmark | 188,400 | 12,190 | 275,600 | £13,813 |
| Germany | 517,500 | 35,850 | 2,631,300 | 153,663 |
| Belgium | 384,500 | 26,533 | 296,200 | 16,119 |
| France | 3,189,400 | 203,969 | 4,054,600 | 209,049 |
| Spain | 30,400 | 2,064 | 128,400 | 6,812 |
| Italy | 657,300 | 43,720 | 913,400 | 43,896 |
| Austria | ..... | ..... | 800 | 80 |
| Hungary | ..... | ..... | ..... | ..... |
| Other European countries | 113,800 | 7,842 | 250,500 | 14,178 |
| United States | 14,636,700 | 1,005,025 | 3,902,900 | 204,684 |
| Canada | 268,900 | 18,640 | 650,700 | 37,564 |
| Other countries | 117,100 | 7,431 | 45,400 | 2,324 |
| Totals | 20,983,700 | £1,416,894 | 13,149,800 | £702,182 |
| Waste and reclaimed rubber | 7,000 | 210 | 1,100 | 6 |
| Gutta percha and balata | 93,800 | 13,642 | 65,400 | 7,784 |
| Rubber substitutes | ..... | ..... | ..... | ..... |
| Totals | 21,084,500 | £1,430,746 | 13,216,300 | £709,972 |
| MANUFACTURED | | | | |
| Boots and shoes....*doz. pairs* | 112 | £382 | 1,045 | £1,378 |
| Tires and tubes | | | | |
| Pneumatic | | | | |
| Outer covers | ..... | 15,704 | ..... | 46,547 |
| Inner tubes | ..... | 3,783 | ..... | 4,118 |
| Solid tires | ..... | 1,331 | ..... | 3,949 |
| Other rubber manufactures | ..... | 7,568 | ..... | 6,229 |
| Totals | ..... | £28,768 | ..... | £62,221 |

## Landings, Deliveries and Stocks in London and Liverpool During May

| | Landed for May | Delivered for May | Stocks May 31 | | |
|---|---|---|---|---|---|
| London: | | | 1924 | 1923 | 1922 |
| Plantation | 4,512 | 7,435 | 51,329 | 54,035 | 70,018 |
| Other grades | 11 | .... | 118 | 101 | 128 |
| Liverpool: | | | | | |
| Plantation | †106 | †917 | †4,270 | †5,953 | †7,593 |
| Pará and Peruvian | 320 | 394 | 716 | 297 | 980 |
| Other grades | .... | .... | 210 | 229 | 429 |
| Total tons, London and Liverpool | 4,949 | 8,746 | 56,643 | 60,615 | 79,148 |

† Official returns from the six recognized public warehouses.

# Crude Rubber Arrivals at New York as Reported by Importers

## Parás and Caucho

| | Fine Cases | Medium Cases | Coarse Cases | Caucho Cases | Cametá Cases |
|---|---|---|---|---|---|
| JUNE 20. By "Alban," Pará. | | | | | |
| H. A. Astlett & Co. | 248 | 6 | .... | .... | .... |
| Paul Bertuch & Co. | 93 | .... | .... | .... | .... |
| General Rubber Co. | 156 | 16 | 85 | .... | 12 |
| L. Littlejohn & Co., Inc. | 175 | .... | 89 | 257 | .... |
| Poel & Kelly, Inc. | .... | .... | 113 | 137 | .... |
| JULY 1. By "Bonheur," Pará. | | | | | |
| H. A. Astlett & Co. | ‡146 | .... | .... | .... | .... |
| Paul Bertuch & Co. | .... | .... | †372 | *490 | .... |
| General Rubber Co. | 400 | 44 | 208 | 17 | ‡21 |
| L. Littlejohn & Co., Inc. | 580 | 1 | 26 | 251 | .... |
| Meyer & Brown, Inc. | ¶471 | .... | 137 | .... | .... |
| Poel & Kelly, Inc. | 634 | 17 | 97 | 530 | .... |
| JULY 12. By "Southern Cross," Montevideo. | | | | | |
| Paul Bertuch & Co. | **324 | .... | ††34 | .... | .... |
| JULY 13. By "Denis," Pará and Manáos. | | | | | |
| H. A. Astlett & Co. | 11 | 6 | 11 | 2 | .... |
| Paul Bertuch & Co. | .... | .... | ‖127 | §62 | .... |
| Paul Bertuch & Co. | 617 | .... | †39 | .... | .... |
| General Rubber Co. | .... | .... | 53 | 66 | .... |
| L. Littlejohn & Co., Inc. | 342 | .... | 27 | 111 | .... |
| Meyer & Brown, Inc. | 987 | .... | .... | .... | .... |
| Poel & Kelly, Inc. | 239 | 1 | 88 | 390 | .... |
| Fred. Stern & Co., Inc. | 665 | .... | 3 | .... | .... |

¹ Includes 8 cases of Mixed Pará grades.
‡Washed and dried in Brazil. †Skins. *Bales. ‖Sacks. §Bags. **Biscuits. ¶ Fine and medium. ††Seroons.

## Plantations

JUNE 19. By "Arcturus," Far East.

| | |
|---|---|
| Fisk Rubber Co. | 112 cases |
| Meyer & Brown, Inc. | 160 cases |

JUNE 22. By "Franconia," Singapore.

| | |
|---|---|
| Chas. T. Wilson Co, Inc. | 71 cases |

JUNE 24. By "American Banker," London.

| | |
|---|---|
| General Rubber Co. | 1,503 cases |

JUNE 26. By "Moorish Prince," Far East.

| | |
|---|---|
| H. A. Astlett & Co. | 399 cases |
| Baird Rubber & Trading Co., Inc. | 1,587 cases |
| Baird Rubber & Trading Co., Inc. | *50 cases |
| Fisk Rubber Co. | 619 cases |
| General Rubber Co. | 1,449 cases |
| Hood Rubber Co. | *639 cases |
| J. T. Johnstone & Co., Inc. | 541 cases |
| L. Littlejohn & Co., Inc. | 8,595 cases |
| Meyer & Brown, Inc. | 2,175 cases |
| H. Muehlstein & Co., Inc. | 2,540 cases |
| Poel & Kelly, Inc. | 5,260 cases |
| Fred Stern & Co., Inc. | 609 cases |
| Vernon Metal & Produce Co., Inc. | 790 cases |
| Chas. T. Wilson Co., Inc. | 1,219 cases |

JUNE 30. By "Esther Dollar," Singapore.

| | |
|---|---|
| Baird Rubber & Trading Co., Inc. | 275 cases |
| General Rubber Co. | 662 cases |
| L. Littlejohn & Co., Inc. | 1,346 cases |
| Meyer & Brown, Inc. | 526 cases |
| H. Muehlstein & Co., Inc. | 506 cases |
| Poel & Kelly, Inc. | 1,237 cases |
| Vernon Metal & Produce Co., Inc. | 152 cases |
| Chas. T. Wilson Co., Inc. | 675 cases |

JUNE 30. By "Gaasterdyk," Europe.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 19 cases |

JUNE 30. By "Knowsley Hall," Far East.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 136 cases |

JUNE 30. By "West Mohamet," Far East.

| | |
|---|---|
| H. A. Astlett & Co. | 223 cases |
| Baird Rubber & Trading Co., Inc. | 322 cases |
| Fisk Rubber Co. | 1,025 cases |
| General Rubber Co. | 3,256 cases |
| J. T. Johnstone & Co., Inc. | 137 cases |
| L. Littlejohn & Co., Inc. | 3,189 cases |
| Meyer & Brown, Inc. | 1,540 cases |
| H. Muehlstein & Co., Inc. | 1,230 cases |
| Poel & Kelly, Inc. | 3,948 cases |
| Fred Stern & Co., Inc. | 530 cases |
| Chas. T. Wilson Co., Inc. | 596 cases |

JULY 1. By "American Farmer," London.

| | |
|---|---|
| General Rubber Co. | 3,994 cases |

JULY 1. By "Belgenland," London.

| | |
|---|---|
| F. R. Henderson & Co., Inc. | 56 cases |
| Chas. T. Wilson Co., Inc. | 80 cases |

JULY 2. By "Steel Maker," Far East.

| | |
|---|---|
| Baird Rubber & Trading Co., Inc. | 450 cases |
| Baird Rubber & Trading Co., Inc. | 125 cases |
| General Rubber Co. | 2,208 cases |
| Hood Rubber Co. | 560 cases |
| J. T. Johnstone & Co., Inc. | 50 cases |
| L. Littlejohn & Co., Inc. | 1,110 cases |
| Meyer & Brown, Inc. | 325 cases |
| H. Muehlstein & Co., Inc. | 924 cases |
| Poel & Kelly, Inc. | 569 cases |
| Fred Stern & Co., Inc. | 100 cases |
| Chas. T. Wilson Co., Inc. | 240 cases |

JULY 2. By "Albania," Europe.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 817 cases |

JULY 5. By "President Monroe," Far East.

| | |
|---|---|
| Paul Bertuch & Co. | *112 cases |
| Fisk Rubber Co. | 2,999 cases |
| General Rubber Co. | 224 cases |
| Hood Rubber Co. | *147 cases |
| J. T. Johnstone & Co., Inc. | 360 cases |
| L. Littlejohn & Co., Inc. | 744 cases |
| Meyer & Brown, Inc. | 65 cases |
| Poel & Kelly, Inc. | 410 cases |
| Vernon Metal & Produce Co., Inc. | 340 cases |
| Chas. T. Wilson Co., Inc. | 56 cases |

JULY 6. By "Minnetonka," London.

| | |
|---|---|
| H. A. Astlett & Co. | 121 cases |

JULY 8. By "American Shipper," London.

| | |
|---|---|
| F. R. Henderson & Co., Inc. | 41 cases |

JULY 8. By "Laconia," London.

| | |
|---|---|
| Poel & Kelly, Inc. | 1,575 cases |

JULY 9. By "Keemun," Far East.

| | |
|---|---|
| H. A. Astlett & Co. | 856 cases |
| H. A. Astlett & Co. | *196 cases |
| Baird Rubber & Trading Co., Inc. | 294 cases |
| Paul Bertuch & Co. | 200 cases |
| General Rubber Co. | 219 cases |
| F. R. Henderson & Co., Inc. | 217 cases |
| Hood Rubber Co. | *271 cases |
| J. T. Johnstone & Co., Inc. | 500 cases |
| L. Littlejohn & Co., Inc. | 2,502 cases |
| Meyer & Brown, Inc. | 260 cases |
| Poel & Kelly, Inc. | 3,500 cases |
| Fred Stern & Co., Inc. | 695 cases |
| Vernon Metal & Produce Co., Inc. | 550 cases |
| Chas. T. Wilson Co., Inc. | 822 cases |

JULY 10. By "City of Oran," Singapore.

| | |
|---|---|
| Paul Bertuch & Co. | 250 cases |

JULY 11. By "City of Lincoln," Far East.

| | |
|---|---|
| General Rubber Co. | 250 cases |
| L. Littlejohn & Co., Inc. | 79 cases |
| Poel & Kelly, Inc. | 295 cases |
| Chas. T. Wilson Co., Inc. | 560 cases |

JULY 11. By "Djambi," Far East.

| | |
|---|---|
| H. A. Astlett & Co. | 385 cases |
| Baird Rubber & Trading Co., Inc. | 362 cases |
| Baird Rubber & Trading Co., Inc. | *82 cases |
| Fisk Rubber Co. | 331 cases |
| General Rubber Co. | 2,840 cases |
| J. T. Johnstone & Co., Inc. | 496 cases |
| L. Littlejohn & Co., Inc. | 1,474 cases |
| Meyer & Brown, Inc. | 395 cases |
| Poel & Kelly, Inc. | 1,462 cases |
| Vernon Metal & Produce Co., Inc. | 132 cases |
| Chas. T. Wilson Co., Inc. | 522 cases |

JULY 11. By "Karroo," Far East.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 285 cases |
| Vernon Metal & Produce Co., Inc. | 112 cases |

JULY 14. By "Dacre Castle," Far East.

| | |
|---|---|
| H. A. Astlett & Co. | 650 cases |
| Baird Rubber & Trading Co., Inc. | 605 cases |
| General Rubber Co. | 870 cases |
| Hood Rubber Co. | *233 cases |
| J. T. Johnstone & Co., Inc. | 70 cases |
| L. Littlejohn & Co., Inc. | 4,422 cases |
| Meyer & Brown, Inc. | 1,170 cases |
| Poel & Kelly, Inc. | 3,034 cases |
| Fred Stern & Co., Inc. | 325 cases |
| Vernon Metal & Produce Co., Inc. | 456 cases |
| Chas. T. Wilson Co., Inc. | 842 cases |

JULY 14. By "Lapland," Europe.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 272 cases |

JULY 15. By "Scythia," Europe.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 81 cases |

JULY 16. By "Knaresbro," Far East.

| | |
|---|---|
| H. A. Astlett & Co. | 855 cases |
| H. A. Astlett & Co. | *122 cases |
| Baird Rubber & Trading Co., Inc. | 879 cases |
| Baird Rubber & Trading Co., Inc. | *370 cases |
| Paul Bertuch & Co. | *50 cases |
| General Rubber Co. | 694 cases |
| Hood Rubber Co. | *189 cases |
| J. T. Johnstone & Co., Inc. | 2,000 cases |
| L. Littlejohn & Co., Inc. | 2,361 cases |
| Meyer & Brown, Inc. | 1,816 cases |
| Fred Stern & Co., Inc. | 188 cases |
| Vernon Metal & Produce Co., Inc. | 1,009 cases |
| Chas. T. Wilson Co., Inc. | 701 cases |

JULY 16. By "Valacia," Europe.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 203 cases |
| Vernon Metal & Produce Co., Inc. | 86 cases |

JULY 18. By "President Harrison," Far East.

| | |
|---|---|
| L. Littlejohn & Co., Inc. | 206 cases |

JULY 20. By "Minnewaska," Singapore.

| | |
|---|---|
| Fisk Rubber Co. | 51 cases |

*Arrived at Boston.

## Africans

JUNE 22. By "Franconia," Liverpool.

| | |
|---|---|
| Poel & Kelly, Inc. | 29 barrels |

JULY 3. By "Adriatic," Liverpool.

| | |
|---|---|
| Fred Stern & Co., Inc. | 9 casks |

JULY 8. By "Laconia," London.

| | |
|---|---|
| Poel & Kelly, Inc. | 1,037 cases |

JULY 11. By "Djambi," Amsterdam.

| | |
|---|---|
| Hood Rubber Co. | 45 cases |

JULY 17. By "Olen," Bordeaux.

| | |
|---|---|
| Poel & Kelly, Inc. | 207 cases |

## Balata

JUNE 29. By "Carrillo," Cartagena.

| | |
|---|---|
| Ultramares Corp. | 6 cases |

JULY 1. By "Bonheur," Manáos.

| | |
|---|---|
| Paul Bertuch & Co. | 6 cases |

JULY 7. By "Bolivar," Cartagena.

| | |
|---|---|
| Ultramares Corp. | 6 bales |

JULY 13. By "Denis," Manáos.

| | |
|---|---|
| Paul Bertuch | 37 cases |

## Guayule

JUNE 26—JULY 18. By "Railways," Mexico.

| | |
|---|---|
| Continental Rubber Co. | 3,180 cases |

## Manicoba

JUNE 30. By "Carmania," Liverpool.

| | |
|---|---|
| H. A. Astlett & Co. | 7 cases |

## Pontianak

JULY 5. By "President Monroe," Singapore.

| | |
|---|---|
| F. R. Henderson & Co., Inc. | 70 cases |

## Rubber Latex

JUNE 30. By "West Mohamet," Far East.

| | |
|---|---|
| General Rubber Co. | 83,220 pounds |

JULY 14. By "Dacre Castle," Far East.

| | |
|---|---|
| General Rubber Co. | 274,974 pounds |

# Rubber Statistics for France

## Imports of Crude and Manufactured Rubber

| | 1922 Quintals [1] | 1922 Francs | 1923 Quintals | 1923 Francs |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Crude rubber and gutta percha— | | | | |
| From Brazil | 42,505 | | 22,677 | |
| England | 146,012 | | 168,035 | |
| French Congo | 8,000 | | 8,125 | |
| Other French W. Africa | 3,607 | 118,653,000 | 6,190 | 328,879,000 |
| British Indies | 48,491 | | 82,725 | |
| West Africa | 1,847 | | 2,022 | |
| Indo China | 30,699 | | 36,930 | |
| Other countries | 26,805 | | 44,004 | |
| Totals | 307,960 | 118,653,000 | 370,708 | 328,879,000 |
| MANUFACTURED | | | | |
| Unvulcanized sheets | 1,013 | 1,673,000 | 1,004 | 1,987,000 |
| Rubber thread | 3,573 | 9,644,000 | 4,308 | 13,597,000 |
| Elastic fabric | 386 | 2,246,000 | 242 | 1,614,000 |
| Rubberized fabrics | 213 | 456,000 | 479 | 1,239,000 |
| Articles of rubberized fabrics | 7 | 64,000 | 5 | 38,000 |
| Garment protectors | 44 | 224,000 | 34 | 117,000 |
| Belts, garters, etc. | 62 | 336,000 | 51 | 399,000 |
| Apparel | 196 | 1,422,000 | 300 | 1,872,000 |
| Card clothing | 342 | 1,052,000 | 346 | 1,234,000 |
| Footwear | 1,564 | 2,118,000 | 1,795 | 2,495,000 |
| Tires and tubes | 14,589 | 18,864,000 | 11,775 | 17,140,000 |
| Belting, hose, packing | 11,752 | 20,408,000 | 10,138 | 24,478,000 |
| Totals, manufactured | 33,741 | 58,507,000 | 30,477 | 66,210,000 |
| Totals, imported | 341,707 | 177,160,000 | 401,185 | 395,089,000 |

## Exports of Crude and Manufactured Rubber

| | | | | |
|---|---|---|---|---|
| UNMANUFACTURED | | | | |
| Crude rubber and gutta percha— | | | | |
| To England | 1,141 | | 3,573 | |
| United States | 1,080 | | 17,654 | |
| Germany | 13,964 | | 3,561 | |
| Belgium | 2,160 | 12,026,000 | 14,736 | 33,553,000 |
| Spain | 3,428 | | 4,818 | |
| Italy | 3,226 | | 6,325 | |
| Other countries | 1,797 | | 3,364 | |
| Totals | 26,796 | 12,026,000 | 54,031 | 33,553,000 |
| MANUFACTURED | | | | |
| Sheets and threads | 556 | 1,082,000 | 954 | 1,968,000 |
| Elastic fabrics | 882 | 9,375,000 | 1,501 | 17,224,000 |
| Rubberized fabrics | 2,262 | 9,615,000 | 1,477 | 6,779,000 |
| Card clothing | 1,466 | 4,257,000 | 1,453 | 4,558,000 |
| Apparel | 1,939 | 16,480,000 | 1,519 | 13,944,000 |
| Articles of rubberized fabric | 167 | 1,716,000 | 167 | 1,840,000 |
| Footwear | 23,284 | 43,540,000 | 15,196 | 30,696,000 |
| Tires and tubes | | | | |
| To England | 35,905 | | 37,712 | |
| Belgium | 21,271 | | 20,745 | |
| Switzerland | 12,479 | | 19,499 | |
| Spain | 9,045 | 369,195,000 | 17,401 | 500,380,000 |
| United States | 3,473 | | 1,646 | |
| Morocco | ..... | | 4,840 | |
| Other countries | 62,609 | | 79,849 | |
| | 144,782 | 369,195,000 | 181,692 | 500,380,000 |
| Belting, hose and packing | 13,165 | 22,380,000 | 15,525 | 28,504,000 |
| Totals, manufactured | 188,503 | 477,640,000 | 219,484 | 605,893,000 |
| Totals, exported | 215,299 | 489,666,000 | 273,515 | 639,446,000 |

[1] Quintal = 100 kilograms, or about 220 pounds avoirdupois.

# Rubber Statistics for Germany

## Imports of Crude and Manufactured Rubber

| | 1922 Quintals | 1923 Quintals |
|---|---|---|
| UNMANUFACTURED— | | |
| India rubber, raw or refined: | | |
| From British India | 61,398 | 28,052 |
| Ceylon | 62,620 | 39,767 |
| Malaya | 7,812 | 8,421 |
| Netherlands East Indies | 99,057 | 93,150 |
| Brazil | 27,515 | 12,388 |
| Other countries | 29,553 | 15,708 |
| Totals | 287,955 | 197,486 |
| Gutta percha, raw or refined | 6,661 | 2,238 |
| Balata, raw or refined | 3,496 | 1,354 |
| Waste rubber, gutta percha or balata | 36,268 | 25,002 |
| Totals, unmanufactured | 334,380 | 226,080 |
| Rubber substitute | 115 | ..... |
| MANUFACTURED— | | |
| Rubber solution | 13 | 1 |
| Soft rubber dough, sheets, etc. | 19 | 10 |
| Cut unvulcanized sheets | 34 | 1 |
| Threads | 144 | 548 |
| Tires and tubes | 2,217 | 505[1] |
| Belting, hose and packing | 183 | 120[1] |
| Rubber footwear | 5 | 38 |
| Rubberized wagon covers | 28 | 60[1] |
| Rubberized goods | 202 | 82 |
| Other soft rubber goods | 742[1] | 652[1] |
| Press cloth and card clothing of rubber | 547 | 425 |
| Hard rubber goods | 138 | 116 |
| Totals, manufactured | 4,272 | 2,558 |
| Totals, imported | 338,767 | 228,638 |

## Exports of Crude and Manufactured Rubber

| | 1922 Quintals | 1923 Quintals |
|---|---|---|
| UNMANUFACTURED— | | |
| India rubber, raw or refined: | | |
| To Austria | 2,268 | 3,447 |
| Czecho-Slovakia | 525 | 760 |
| Sweden | 1,153 | 393 |
| Finland | 541 | 489 |
| Other countries | 3,583 | 4,239 |
| Totals | 8,070 | 9,328 |
| Gutta percha, raw or refined | 192 | 253 |
| Balata, raw or refined | 319 | 698 |
| Waste rubber, gutta percha, balata | 3,496 | 8,805 |
| Totals, unmanufactured | 12,077 | 19,084 |
| Rubber substitute | 4,422 | 5,521 |
| MANUFACTURED— | | |
| Rubber solution | 2,796 | 1,811 |
| Soft rubber dough, sheets, etc. | 2,797 | 1,116 |
| Cut unvulcanized sheets | 306 | 918 |
| Threads | 1,066 | 1,104 |
| Rubber footwear | 5,757 | 7,489 |
| Tires and tubes | 44,182 | 51,651 |
| Belting, hose and packing | 26,111 | 25,328 |
| Rubberized wagon covers | 5 | 24 |
| Rubberized goods | 11,560 | 14,824 |
| Rubber press cloths and card clothing | 299 | 143 |
| Other soft rubber goods | 66,883 | 66,048 |
| Hard rubber goods | 7,439 | 9,794 |
| Rubber goods not specified | 71 | 77 |
| Totals, manufactured | 169,272 | 180,327 |
| Totals, exported | 185,771 | 204,932 |

[1] Including returned goods.

# British Malaya

## Rubber Exports

An official cablegram from Singapore states that the amount of rubber exported from British Malaya in the month of June was 18,084 tons. The amount of rubber imported during the month was 7,435 tons. In this latter figure no deduction has been made for moisture in the native rubber from the Netherlands East Indies.

The following are the comparative statistics:

| | 1923 Gross Exports Tons | 1923 Foreign Imports Tons | 1924 Gross Exports Tons | 1924 Foreign Imports Tons |
|---|---|---|---|---|
| January | 22,871 | 4,358 | 23,844 | 8,867 |
| February | 19,907 | 4,089 | 19,395 | 7,440 |
| March | 23,646 | 5,108 | 22,294 | 8,269 |
| April | 24,008 | 5,389 | 20,551 | 7,909 |
| May | 20,115 | 5,020 | 19,674 | 7,259 |
| June | 18,621 | 4,957 | *18,084 | *7,435 |

## Distribution

The following is a comparative return of distribution of shipments during the months of May and June, 1924:

| Destination— | May, 1924 Tons | June, 1924 Tons |
|---|---|---|
| United Kingdom | 2,787.11 | *2,787 |
| U. S. of America | 12,653.56 | *11,712 |
| Continent of Europe | 2,213.82 | *1,602 |
| British Possessions | 637.22 | *226 |
| Japan | 1,367.16 | *1,740 |
| Other countries | 15.29 | *17 |
| Totals | 19,674.16 | *18,084 |

* To the nearest ton.

INDIA RUBBER WORLD
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CAOUTCHOUC
GUTTA-PERCHA
Reg. U.S. Pat. Off.
Reg. United Kingdom.

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# Thermoid Brake Lining

*Hydraulic Compressed*

THERMOID RUBBER COMPANY

*Factories and Main Office:* TRENTON, N. J.

*Branches:*

New York Atlanta Los Angeles Cleveland
Boston Detroit Chicago Kansas City Seattle
London Paris Turin

# R. S. HARDY CO.

***Crude Rubber***

***and***

***Balata***

**44 Broad Street, New York**

**Telephones, Broad 0867, 0868, 0869, 0870**

## AKRON-WILLIAMS

## Tire Factory Equipment

Cores, Molds, Hydraulic Presses, Platen Presses. Manufacturers of all kinds of tire building equipment also tire repair equipment.

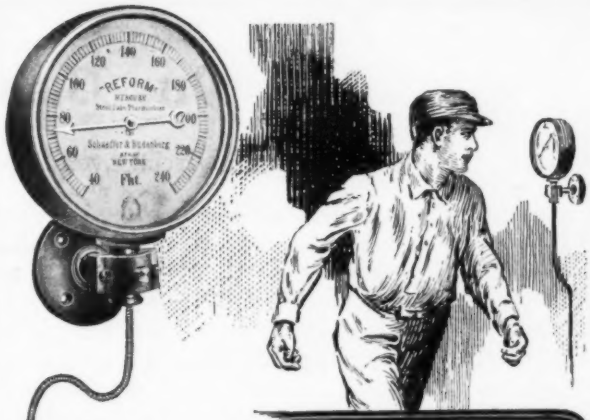
Licensed manufacturers of De Mattia Type Cores.

*Let Us Quote You on Your Requirements*

THE

## Williams Foundry and Machine Co.

Akron, Ohio, U. S. A.




# Reform Thermometers

## take care of Hard-to-get-at Places

A DIAL Thermometer is always more quickly, easily and accurately read than a mercury tube thermometer—that's the first big advantage of the Reform Dial Thermometer.

The second big advantage is that, regardless of the location of the point at which the temperature is to be taken, the dial of this thermometer can always be placed out in the open where it can be read at a glance.

The bulb is installed in a feed-water pipe, condenser, economizer, or any other point, and the dial wherever it is most convenient to read same.

The Reform Dial Thermometer puts an end to all the old difficulties and exasperations in keeping tabs on temperature at dark or inaccessible points. This obviously means a big saving of time and trouble.

Reform Dial Thermometers are mercury actuated, therefore as accurate, dependable and sensitive as mercury glass-tube thermometers.

This thermometer consists of a steel bulb, steel capillary tube and steel coil spring, all filled with mercury. The connecting tube can be supplied any reasonable length and the bulb is furnished for all applications.

Made for temperature ranges from 30° F. below to 1000° above zero.

Our interesting Catalog No. G-18 sent on request.

**American Schaeffer & Budenberg Corporation**

BROOKLYN, N. Y.

Succeeding

THE SCHAEFFER & BUDENBERG MFG. CO.

AMERICAN STEAM GAUGE & VALVE MFG. CO.

HOHMANN-NELSON COMPANY

| | | |
|---|---|---|
| *Boston | Detroit | *Pittsburgh |
| Buffalo | *Los Angeles | Salt Lake City |
| *Chicago | Philadelphia | Seattle |
| Cleveland | | Tulsa |

*Stock carried at these branches

# Our Publicity Page

## The Direct Avenue to a Billion Dollar Market

MANY of our constant readers and advertisers of many years standing have often written to us saying that they consider THE INDIA RUBBER WORLD the "best," the "greatest," the "most comprehensive," "up-to-the-minute," "informing," "productive" rubber trade paper, etc. All of which is highly gratifying, to say the least. While it has ever been the aim of the editor and publisher to lead the way in this special field of trade journalism, it remains for our readers to say to what degree this aim has been realized. But that it is the "greatest" and "most productive" journal in its field we have no hesitancy in asserting, as it is a self-evident fact which has been demonstrated in several ways time and again.

### *Represents an Enormous Buying Power*

Not only has THE INDIA RUBBER WORLD a large paid circulation in the general rubber trade, but it represents a buying power equalled by few business papers in any industry. The rubber industry now embraces a billion dollar annual business, and THE INDIA RUBBER WORLD, circulating regularly among some 95 per cent of the trade, constitutes a bond of common interest between the buyers, sellers and manufacturers of rubber goods everywhere and the various allied industries which are purveyors to rubber goods manufacturers.

### *Largest Volume of Rubber Trade Advertising*

When one considers the great importance of the market and the economy of approach through this medium of widespread popularity, it becomes evident that advertising in THE INDIA RUBBER WORLD affords the cheapest and most direct avenue to a billion dollar market. Only high-grade advertising is accepted, in order to safeguard alike the interests of its readers and the houses which use its columns, and it carries a greater volume than any other rubber trade paper. This is an indication of what rubber trade advertisers think of THE INDIA RUBBER WORLD and its sales power.

### *Advertising Rates Low in the Light of Circulation*

Nobody has ever questioned the eminence of THE INDIA RUBBER WORLD circulation in size or in the buying power it represents. Correspondingly nobody could question the value represented by the advertising rates of THE INDIA RUBBER WORLD. They are low when considered in the light of circulation—percentage of this great market reached—prestige and the influence of THE INDIA RUBBER WORLD with its readers.

### *Advertisers' Index a Blue Book*

As to the character of the advertisers using space in THE INDIA RUBBER WORLD we point with pride to the advertisers' index in every issue. It reads like a blue book of the leaders in the rubber and allied trades. One sees at a glance that it is the buyers' guide of one of America's greatest industries. A trade paper is known by the advertisers it keeps. Most of the advertisers in THE INDIA RUBBER WORLD are constant advertisers. Many of them have been continuous space buyers for long periods of years and some of them since THE INDIA RUBBER WORLD was founded, in 1889. Advertisers rarely leave its columns. This is another proof that its space is worth more than it costs.

### *Greatest Rubber Medium Available*

To any firm having a rubber product to market, or anything to sell to manufacturers of rubber goods, we have no hesitancy in asserting that THE INDIA RUBBER WORLD offers the greatest advertising medium available and the cheapest in point of results. Its authority and prestige are such that the right men read it. Its highly specialized character reduces expensive waste circulation to the minimum. Every reader is a thorough student of its advertising as well as text and is either a potential buyer or interested in some degree in the monthly announcements and convincing sales arguments of every progressive advertiser.

**Waterproofed, Rubberized and Combined**

**COATED FABRICS**

**Single and Double Texture for Automobile Tops, Raincoats, Etc.**

***Centrally Located for Middle West Shipments***

**THE TOLEDO AUTO FABRICS CO. Toledo, Ohio**

, 1924

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